2.7 Problem

Location	-	Marsh End Road roundabout
Summary	-	Road markings may not correctly guide circulating vehicles leading to side swipe collisions

The proposed lane markings at signalised Marsh End Road roundabout do not guide vehicles in the offside right turn lanes into an appropriate lane to exit from the junction at the next node. The “tracer” road markings of some of the ahead lanes guides vehicles to continue circulating to the right. There may be conflict and side swipe collisions between vehicles circulating the junction in adjacent lanes. This is a particular problem for southbound traffic entering the roundabout from Willen Road turning right H3 Monks Way.

Recommendation

Road markings should be reviewed to ensure they provide correct guidance for the intended paths of vehicles using each lane.

Design Team Response
The road markings and lane destination arrows on the approaches and circulatory carriageway have been amended in response to the above road safety issue.

2.8 Problem

Location - Marsh End Road roundabout

Summary - Coordination of traffic signal phases not clear

The stage diagram for Marsh End Road roundabout traffic signals just provides the staging for each node. However, it does not indicate how each node will be coordinated / linked with the other nodes, including the Toucan crossing on the A422 eastbound exit. In some locations, it is possible that a driver may see traffic signals relating to more than one phase which may be showing different aspects. Drivers may be confused and fail to stop at a stop line when required, or may stop unexpectedly when not required to do so.

Recommendation

The configuration of the traffic signals should be developed in more detail. When there is an understanding of how the nodes may be linked, the design should be reviewed to ensure that drivers will have clear sight of the relevant traffic signals, and that misleading signals are relocated, or masked.

Design Team Response
Similar to Problem 2.5, during the detailed design stage, appropriate positioning, additional cowling, indicative arrows, etc. will be detailed in order to mitigate against potential misinterpretation.

2.9 Problem

Location - Marsh End Road Roundabout

Summary - Limited provision for cyclists to access and exit Redway

The scheme provides an off carriageway shared footway / cycle track Redway along Willen Road which is accessible for cyclists at the south and north of the scheme. However, at the Marsh End Road roundabout, there is no provision for cyclists on the A422 / H3 Monks Way to leave the carriageway and joint the Redway. Cyclists may remain on the carriageway where they will be at increased risk of being struck by a vehicle.

Conversely, there appears to be no provision for cyclists to leave the Redway and safely join the carriageway e.g. no facility for cyclists to access H3 Monks Way westbound from the Redway.

Recommendation

Ensure cyclists can enter / exit the Redway at the earliest opportunity from A422 / H3 Monks Way and reinforce the intended route for cyclists with the provision of appropriate signing.

Design Team Response
As detailed within the Walking, Cycling, & Horse-Riding Assessment (provided within the design package submitted to the RSA Team), the scheme proposals are to provide pedestrian / cyclist links:-

- **From Milton Keynes to the proposed development; and**
- **From Newport Pagnell to the proposed development;**
- **Including improvements to existing Non-Motorised User (NMU) facilities;**

There are currently no cycle facilities on the H3 Monks Way and the A422 dual carriageways. Any cyclist currently using these high speed roads is likely to be a confident and experienced cyclist, who would prefer to remain in the carriageway rather than use off carriageway facilities. Therefore, the scheme proposals have not catered for these approaches. Notwithstanding the above, we have updated the scheme proposals to provide a cycle exit accessing the proposed Redway on the westbound A422 approach (prior to the Toucan crossing).

2.10 Problem

Location	-	Marsh End Road roundabout
Summary	-	Proposed alignment of Road Restraint System may not provide protection to vulnerable users within the central reserve

It is proposed to provide a new section of Road Restraint System in the central reserve of A422, east of the Marsh End Road roundabout, tying into the existing safety fencing. However, the alignment indicated would not provide any protection to the footway / cycle track Redway within the central reserve, and it may tend to redirect any errant vehicle towards the Redway. This would increase the risk of a pedestrian or cyclist being struck by a vehicle.

Recommendation

The proposed Road Restraint System should be aligned to provide more protection to the Redway within the central reserve.

Design Team Response
The proposed Road Restraint System has been realigned to offer more protection to the footway / cycle track within the central reserve from A422 Westbound traffic.

2.11 Problem

Location	-	Willen Road / Marsh End Road junction
Summary	-	Location of 30mph speed limit and signage conflicts with Unclear / disjointed cycle facilities potential vehicle / cycle conflicts

At the junction of Willen Road and Marsh End Road, the proposed Redway will have a crossing points of Marsh End Road and Willen Road. These crossing points coincide with the start / finish of the existing 30mph speed limit for traffic entering Newport Pagnell. Vehicles may not have reduced speed at the location of the crossing points and so pedestrians and cyclists may be at increased risk of injury if struck by a vehicle. Also, the sign posts associated with the speed limit signage at the crossing points may impede pedestrians and cyclists and could partially restrict intervisibility with approaching vehicles.

Recommendation

In conjunction with providing a 40mph speed limit on Willen Road, the 30mph speed limit should start further south, possible coinciding with the “Welcome to Newport Pagnell” sign such that the existing junction and proposed crossing points are entirely within the 30mph speed limit.

Design Team Response

We have amended the proposed speed limit alteration in response to the above recommendation. However, any alterations to the speed limits will be subject to liaison and agreement with MKC. Therefore, any update to the scheme proposals will be on this basis.

2.12 Problem

Location	-	Willen Road / Marsh End Road junction
Summary	-	Visibility to crossing point restricted - potential pedestrian / cycle and vehicle conflicts

It is proposed to provide new sections of Redway at the Willen Road / Marsh End Road junction. This includes an uncontrolled crossing of the short link on the northern side of the junction in the fork of the 2 roads. The proposed crossing point is obscured by vegetation which is growing along the Tongwell Brook. A pedestrian or cyclist crossing the carriageway may be unsighted and struck by a vehicle turning left from Marsh End Road.

Recommendation

Vegetation should be removed to improve visibility at this location.

Design Team Response
As part of the detailed design of this scheme, visibility requirements will be reviewed at this existing crossing point, and any vegetation which restricts visibility will be removed as required.

2.13 Problem

Location	-	Marsh End Road / Tongwell Lane junction
Summary	-	Unclear / disjointed cycle facilities - potential pedestrian / cycle and vehicle conflicts

At the junction of Willen Road and Marsh End Road, the proposed Redway will have a crossing point of Marsh End Road, connecting with Tongwell Lane (Tongwell Lane having a prohibition of motor vehicle sign and bollards to prevent vehicular access). The existing road layout includes a junction bellmouth for Tongwell lane, which is redundant, but its appearance "invites" drivers to turn in potentially leading to vehicular conflict with pedestrians and cyclists.

Recommendation

Clearly define the route at the entrance of Tongwell Lane for cyclists reducing the redundant bellmouth junction potentially providing a vehicle crossover for access.

Design Team Response
Liaison will be undertaken with MKC in order to determine the status of Tongwell Lane and whether or not this access is to remain as currently provided in order to facilitate emergency access along Tongwell Lane. We can then look to resolve the road safety issue highlighted above within this context.

3 Summary

3.1 This RSA Response Report has been prepared to address the issues raised in the Stage 1 RSA. For issues where the RSA Team's recommendations are not proposed to be fully implemented substantiating reasons have been provided.

Appendix A

Appendix A

Site Reference Plans;

FOR CONTINUATION REFER TO DRAWING 38748/100/008

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

ADVANCE DIRECTIONAL SIGN TO BE ERECTED IN ORDER TO PROVIDE MOTORIST WITH AWARENESS OF THE GEOMETRIC LAYOUT OF THE PROPOSED JUNCTION AND DEVELOPMENT ACCESS

2.4

2m WIDE VERGE TO ACCOMMODATE PROPOSED UTILITIES

7.3m WIDE CARRIAGEWAY

PROPOSED BUS STOP AS PER HIGHWAY GUIDE FOR MILTON KEYNES, BUS STOP SCHEME LAYOUT SS2

OFFLINE REDWAY FORMING A 'FLOATING BUS STOP'

2.6

PROPOSED 2m WIDE FOOTWAY

2.5

PROPOSED TRAFFIC SIGNAL MAINTENANCE ACCESS BAY FORMED USING PERMEABLE PAVING

ON SITE ROAD LAYOUT TAKEN FROM PHP DRAWING 4179-SK015-P25 - 'PROPOSED MASTER PLAN INDICATIVE FOR ZONE 2'

2.4

GRASSED VERGE

2.3

PROPOSED BUS STOP AS PER HIGHWAY GUIDE FOR MILTON KEYNES, BUS STOP SCHEME LAYOUT SS2

OFFLINE REDWAY FORMING A 'FLOATING BUS STOP'

ADVANCE DIRECTIONAL SIGN TO BE ERECTED IN ORDER TO PROVIDE MOTORIST WITH AWARENESS OF THE GEOMETRIC LAYOUT OF THE PROPOSED JUNCTION AND DEVELOPMENT ACCESS

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

2.2

WILLEN ROAD

2.1 PROVISION OF ADS - SIGNS

FOR CONTINUATION REFER RIGHT

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

EXISTING LIGHTING COLUMN TO BE RELOCATED OUTSIDE OF PROPOSED FOOTWAY / CYCLE TRACK AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

WILLEN ROAD

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

EXISTING LIGHTING COLUMN TO BE RELOCATED OUTSIDE OF PROPOSED FOOTWAY / CYCLE TRACK AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH NO BUFFER ZONE ACROSS EXISTING OVERBRIDGE

NEW ROAD RESTRAINT SYSTEM ALIGNED AND EXTENDED TO ACCOMMODATE SHARED USE FOOTWAY / CYCLE TRACK

EXISTING BRIDGE PARAPET HEIGHT 1m. DESIRABLE MINIMUM FOR CYCLE USE 1.4m AS PER IAN 195/16, TABLE 2.5.6. NEW 1.4m HIGH BRIDGE PARAPET TO BE PROVIDED. THESE WORKS MAY REQUIRE AN AIP (APPROVAL IN PRINCIPLE)

EXISTING POST AND RAIL FENCE TO BE RELOCATED OUTSIDE OF THE WORKING WIDTH OF THE NEW ROAD RESTRAINT SYSTEM WHERE POSSIBLE

NEW ROAD RESTRAINT SYSTEM ALIGNED AND EXTENDED TO ACCOMMODATE SHARED USE FOOTWAY / CYCLE TRACK

EXISTING FINGER POST SIGN TO BE RELOCATED AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK TIES INTO EXISTING REDWAY NETWORK

DANSTEED ROAD

Tongwell Roundabout

TONGWELL ROUNDABOUT

68.3m

Subway

DANSTEED WAY

WILLEN ROAD

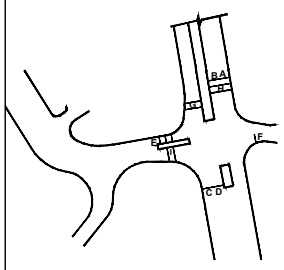
M1

69.2m

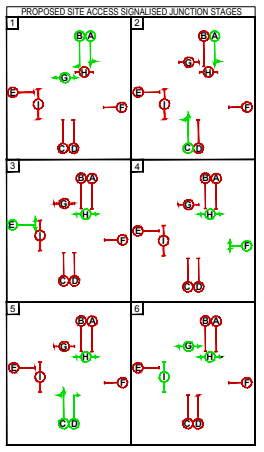
FOR CONTINUATION REFER LEFT

Travellers Site

PROPOSED SIGNALISED SITE ACCESS JUNCTION STAGING



PROPOSED SITE ACCESS SIGNALISED JUNCTION STAGES



KEY:-

- PLANNING BOUNDARY
- HIGHWAYS ENGLAND HIGHWAY BOUNDARY
- MILTON KEYNES COUNCIL HIGHWAY BOUNDARY
- PROPOSED FULL HEIGHT SAFETY BARRIER
- PROPOSED ROAD RESTRAINT TERMINAL
- PROPOSED TRAFFIC SIGNALS
- SIGNAL CONTROL BOX
- JUNCTION INTERVISIBILITY ZONE
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 45m SSD - DESIGN SPEED 40kph

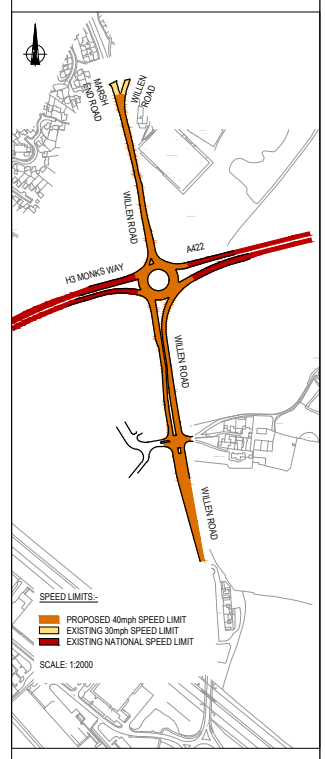
NOTES:-

1. ALIGNMENT OF MILTON KEYNES COUNCIL HIGHWAY BOUNDARY BASED ON HIGHWAY BOUNDARY INFORMATION PROVIDED BY MILTON KEYNES COUNCIL INTERPOLATED AND ALIGNED TO PHYSICAL FEATURES ON THE TOPOGRAPHICAL SURVEY. HIGHWAYS ENGLAND HIGHWAY BOUNDARY BASED ON HIGHWAYS ENGLAND GIS OPEN DATA DATED 28.10.2016.
2. MKC'S DRAFT 'A HIGHWAY GUIDE FOR MILTON KEYNES' DOCUMENT, FIG 1 - 'HIGHWAY NETWORK PLAN' AND TABLE 3.12 - 'TABLE OF LAYOUT STANDARDS' INDICATE THAT THE DESIGN STANDARDS FOR WILLEN ROAD SHOULD BE BASED ON THE DESIGN MANUAL FOR ROADS AND BRIDGES DESIGN STANDARDS.
3. EXISTING POSTED SPEED LIMIT OF WILLEN ROAD IS NATIONAL SPEED LIMIT (60mph). MKC HAVE CONFIRMED THAT A TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT TO 40mph. THEREFORE, THE DESIGN SPEED FOR THIS JUNCTION WILL BE 70kph.
4. THE DESIGN OF THE SIGNALISED JUNCTION HAS BEEN BASED ON ADC INFRASTRUCTURE LINSIG MODEL - '180213 PROPOSED ACCESS AND MITIGATION.lsg3x'.
5. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH:-
   - PBA TECHNICAL NOTE TN2003/001 - 'WILLEN ROAD, SIGNALISED JUNCTION DEVELOPMENT ACCESS';

DESIGN RISK

TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT OF WILLEN ROAD AND REINFORCE THE 70kph DESIGN SPEED. A TRO MAY NOT BE GRANTED, AND THIS PROCESS IS SEPARATE TO THE PLANNING PROCESS.

THE 'SITE ACCESS SIGNALISED JUNCTION' WOULD REQUIRE INDUCTIVE LOOPS ON THE NORTHERN, SOUTHERN AND WESTERN ARMS. MICROWAVE VEHICLE DETECTORS (MVD) COULD BE USED ON THE EASTERN ARM. PLEASE NOTE THAT DUE TO THE PROPOSED LAYOUT OF THE WESTERN DEVELOPMENT ARM I.E. CURVED ACCESS ROAD, WITH T-JUNCTIONS AND ASSOCIATED RIGHT TURN LANES IN CLOSE PROXIMITY TO THE SIGNALLED JUNCTION, IT WOULD NOT BE APPROPRIATE FOR MVD TO BE USED. INDUCTION LOOPS, EXTENDING NO MORE THAN 80m INTO THE DEVELOPMENT ACCESS, WOULD NEED TO BE USED. LIAISON HAS BEEN UNDERTAKEN WITH MKC WHO HAVE AGREED THAT THESE LOOPS CAN BE LOCATED BEYOND THE EXTENT OF THE PROPOSED HIGHWAY BOUNDARY.



Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

ROAD SAFETY AUDIT

LAND AT CALDECOTE FARM
NEWPORT PAGNELL
STAGE 1 SAFETY AUDIT
SITE REFERENCE PLAN

Client

SEGRO NEWPORT PAGNELL LTD

Date of 1st Issue	Designed	Drawn
03.08.2018	-	ST
A0 Scale	Checked	Approved
1:500	PE	PE

Drawing Number: FIGURE 1

Revision: -

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now part of Stantec
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NORTHAMPTON
Tel: 01604 878 300

2.7 ROUNDABOUT ROAD MARKINGS

2.8 COORDINATION OF TRAFFIC SIGNAL PHASES

2.9 ACCESS TO REDWAY FROM A422 / H3 MONKS WAY

KEY:-

- PLANNING BOUNDARY
- MILTON KEYNES COUNCIL HIGHWAY BOUNDARY
- PROPOSED FULL HEIGHT SAFETY BARRIER
- PROPOSED ROAD RESTRAINT TERMINAL
- PROPOSED TRAFFIC SIGNALS
- SIGNAL CONTROL BOX
- JUNCTION INTERVISIBILITY ZONE
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 295m SSD - DESIGN SPEED 120kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 295m SSD - DESIGN SPEED 120kph

NOTES:-

1. ALIGNMENT OF MILTON KEYNES COUNCIL HIGHWAY BOUNDARY BASED ON HIGHWAY BOUNDARY INFORMATION PROVIDED BY MILTON KEYNES COUNCIL INTERPOLATED AND ALIGNED TO PHYSICAL FEATURES ON THE TOPOGRAPHICAL SURVEY. HIGHWAYS ENGLAND HIGHWAY BOUNDARY BASED ON HIGHWAYS ENGLAND GIS OPEN DATA DATED 28.10.2016.
2. MKC'S DRAFT 'A HIGHWAY GUIDE FOR MILTON KEYNES' DOCUMENT, FIG 1 - 'HIGHWAY NETWORK PLAN' AND TABLE 3.12 - 'TABLE OF LAYOUT STANDARDS' INDICATE THAT THE DESIGN STANDARDS FOR WILLEN ROAD SHOULD BE BASED ON THE DESIGN MANUAL FOR ROADS AND BRIDGES DESIGN STANDARDS.
3. EXISTING POSTED SPEED LIMIT OF WILLEN ROAD AND MONKS WAY IS NATIONAL SPEED LIMIT (60mph). MKC HAVE CONFIRMED THAT A TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT TO 40mph ON APPROACH TO THE ROUNDABOUT. THEREFORE, THE DESIGN SPEED FOR THIS JUNCTION WILL BE 70kph.
4. THE DESIGN OF THE SIGNALISED ROUNDABOUT HAS BEEN BASED ON ADC INFRASTRUCTURE LINSIG MODEL - '180213 PROPOSED ACCESS AND MITIGATION.lsg3x'.
5. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH:-
   - PBA TECHNICAL NOTE TN2003/002 - 'A422, SIGNALISED ROUNDABOUT';

DESIGN RISK

TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT ON APPROACH TO MARSH END ROUNDABOUT FROM MONKS WAY WESTBOUND AND EASTBOUND AND REINFORCE THE 70kph DESIGN SPEED. A TRO MAY NOT BE GRANTED, AND THIS PROCESS IS SEPARATE TO THE PLANNING PROCESS.

THE EXISTING LAY-BYS ADJACENT TO H3 MONKS WAY AND THE A422 ARE BEING AFFECTED BY THE SCHEME PROPOSALS. LIAISON HAS BEEN UNDERTAKEN WITH MKC WHO HAVE CONFIRMED THAT THESE LAY-BYS DO NOT NEED TO BE RELOCATED OR REINSTATED ELSEWHERE.

THE EXISTING CROSS SECTION OF H3 MONKS WAY DOES NOT PROVIDE ROAD RESTRAINT SYSTEMS (RRS) WITHIN THE CENTRAL RESERVE. THE PROPOSED PRELIMINARY DESIGN MAINTAINS THE MINIMUM WIDTH OF THE EXISTING CENTRAL RESERVE. LIAISON HAS BEEN UNDERTAKEN WITH MKC WHO HAVE CONFIRMED THAT RRS WILL NEED TO BE PROVIDED WITHIN THE CENTRAL RESERVE OF H3 MONKS WAY. OUR REVIEW OF STOPPING SIGHT DISTANCE (295m) ON THE IMMEDIATE APPROACH TO THE PROPOSED JUNCTION (i.e. 1.5 x 295m) CONFIRMS SSD WOULD NOT BE RESTRICTED, MEASURED TO THE 'OBJECT HEIGHT', DUE TO THE HEIGHT OF THE PROPOSED RRS.

PROPOSED UNCONTROLLED CROSSING TO CONNECT FOOTWAY / CYCLE TRACK TO EXISTING SHARED USE FOOTWAY / CYCLE TRACK

PROPOSED UNCONTROLLED CROSSING TO CONNECT FOOTWAY / CYCLE TRACK TO EXISTING TRAFFIC FREE ROUTE 'TONGWELL LANE' WITH CONNECTIONS TO WIDER REDWAY NETWORK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE NARROWS TO CONNECT WITH EXISTING SHARED USE FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 0.75m WIDE BUFFER ZONE FORMED WITH ROAD MARKING

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE (MINIMUM) BUFFER ZONE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

NEW ROAD RESTRAINT SYSTEM ALIGNED TO SUIT NEW CENTRAL RESERVE ALIGNMENT AND TIED INTO EXISTING ROAD RESTRAINT SYSTEM

NEW ROAD RESTRAINT SYSTEM ALIGNED TO SUIT NEW CENTRAL RESERVE LAYOUT AND TIED INTO EXISTING ROAD RESTRAINT SYSTEM AT M1 OVERBRIDGE TO THE WEST

EXISTING LAY-BY TO BE REMOVED

WILLEN ROAD SPORTS GROUND

Cricket Field

1m WIDE VERGE

0.5m WIDE VERGE

2.5m WIDE VERGE

TONGWELL BROOK

TONGWELL LANE

MARSH ROAD

WILLEN ROAD

H3 MONKS WAY

A422

2.10

2.11

2.12

2.13

FOR CONTINUATION SEE INSET 1

INSET 1

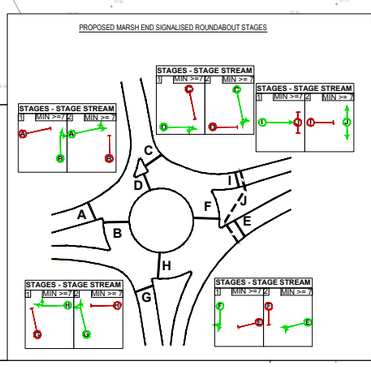
FOR CONTINUATION SEE RIGHT

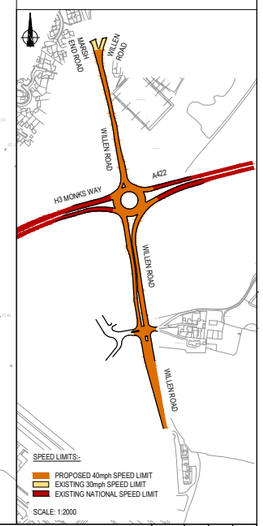
FOR CONTINUATION SEE BELOW

FOR CONTINUATION SEE ABOVE

FOR CONTINUATION REFER TO DRAWING 38748/100/007

PROPOSED MARSH END SIGNALISED ROUNDABOUT STAGES





SPEED LIMITS:-

- PROPOSED 40mph SPEED LIMIT
- EXISTING 30mph SPEED LIMIT
- EXISTING NATIONAL SPEED LIMIT

SCALE: 1:2000

Mark	Revision	Date	Drawn	Chkd	Appd

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UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status

ROAD SAFETY AUDIT

LAND AT CALDECOTE FARM
NEWPORT PAGNELL
STAGE 1 SAFETY AUDIT
SITE REFERENCE PLAN

Client

SEGRO
NEWPORT PAGNELL
LTD

Date of 1st Issue	Designed	Drawn
03.08.2018	-	ST
A0 Scale	Checked	Approved
1:500 & 1:2000	PE	PE

Drawing Number: FIGURE 2

Revision: -

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NORTHAMPTON
Tel: 01604 878 300

LIGHTING REPORT

DATE:	**21 May 2019**
DESIGNER:	**PBA - Now Part of Stantec**
PROJECT No:	**38748**
PROJECT NAME:	**Land at Caldecote Farm, Newport Pagnell**

Lighting designed in accordance with Milton Keynes Council Street Lighting Specification 2016.

Lighting layout designed to Class C2 for Conflict Zones and M3 for all other Roads.

Please also refer to Reality Roadway Lighting design reports and lighting design drawings: 38748/1300/001 and 38748/1300/002 for notes / design rationale & schedules relative to the design.

Outdoor Lighting Report

PREPARED BY:

Design Software from:
Lighting Reality Ltd
Park Business Centre
Wood Lane
Erdington
Birmingham
B24 9QR
United Kingdom

e-mail: sales@lightingreality.com
website: www.lightingreality.com

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1	487526.00	242514.00	170.00	80.00	1.24	1.48
2	Grid 2	487685.41	242635.54	50.00	374.00	1.47	1.50
3	Grid 3	487686.00	242550.00	115.00	85.00	1.49	1.49
4	Grid 4	487794.00	242579.00	150.00	80.00	1.49	1.48
5	Grid 5	487712.01	242397.34	56.00	160.00	1.47	1.50
6	Grid 6	487683.73	242331.35	80.00	65.00	1.48	1.48
7	Grid 7	487772.19	241997.74	48.00	345.00	1.50	1.49
8	Grid 8	487771.70	241738.17	60.00	275.00	1.46	1.49
9	Grid 9	487713.00	242586.00	70.00	374.00	1.49	1.50
10	Grid 10	487755.00	242304.00	100.00	300.00	1.49	1.50
11	Grid 11	487732.05	242041.92	100.00	350.00	1.49	1.50
12	Grid 12	487775.71	241748.22	30.00	310.00	1.43	1.50
13	Grid 13	487618.20	242941.52	54.00	65.00	1.46	1.48

Luminaires

Luminaire A Data

Supplier	Holophane Europe
Type	VMX.L114.V3.F4Q1
Lamp(s)	LED C.11000LM - 4000K
Lamp Flux (klm)	12.32
File Name	VMX.L114.V3.F4Q1.IES
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	461.8, 69.9, 0.0
No. in Project	62

Luminaire B Data

Supplier	Holophane Europe
Type	VMX.L154.V4.X2L2
Lamp(s)	LED C.15000LM - 4000K
Lamp Flux (klm)	15.53
File Name	VMX.L154.V4.X2L2.IES
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	739.3, 67.4, 0.0
No. in Project	12

Luminaire C Data

Supplier	Holophane Europe
Type	VMX.L234.V8.D4D4
Lamp(s)	LED C.23000LM - 4000K
Lamp Flux (klm)	23.09
File Name	VMX.L234.V8.D4D4.IES
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	715.0, 302.4, 0.5
No. in Project	10

Lighting Reality Ltd. Park Business Centre, Wood Lane, Erdington, Birmingham, B24 9QR UK e-mail: sales@lightingreality.com website: www.lightingreality.com

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	487761.07	242323.21	12.00	190.00	0.00	0.00	1.00			
2	A	487731.59	242318.12	12.00	10.00	0.00	0.00	1.00			
3	A	487770.96	242287.95	12.00	190.00	0.00	0.00	1.00			
4	A	487736.75	242294.64	12.00	10.00	0.00	0.00	1.00			
5	A	487706.72	242372.86	12.00	306.00	0.00	0.00	1.00			
6	A	487727.15	242343.20	12.00	10.00	0.00	0.00	1.00			
7	A	487756.85	242347.23	12.00	190.00	0.00	0.00	1.00			
8	A	487772.48	242258.80	12.00	190.00	0.00	0.00	1.00			
9	A	487746.14	242256.45	12.00	10.00	0.00	0.00	1.00			
10	A	487755.90	242222.39	12.00	10.00	0.00	0.00	1.00			
11	A	487797.84	242101.04	12.00	190.00	0.00	0.00	1.00			
12	A	487716.44	242353.51	12.00	88.00	0.00	0.00	1.00			
13	A	487768.95	242311.34	12.00	276.00	0.00	0.00	1.00			
14	A	487747.33	242414.88	12.00	191.00	0.00	0.00	1.00			
15	A	487719.67	242411.32	12.00	4.00	0.00	0.00	1.00			
16	A	487715.80	242443.01	12.00	8.00	0.00	0.00	1.00			
17	A	487738.65	242540.23	12.00	165.00	0.00	0.00	1.00			
18	A	487701.06	242542.58	12.00	10.00	0.00	0.00	1.00			
19	A	487737.68	242477.06	12.00	190.00	0.00	0.00	1.00			
20	A	487711.90	242473.18	12.00	10.00	0.00	0.00	1.00			
21	A	487742.38	242446.31	12.00	189.00	0.00	0.00	1.00			
22	C	487677.04	242570.86	12.00	78.00	0.00	0.00	1.00			
23	A	487733.79	242507.93	12.00	180.00	0.00	0.00	1.00			
24	A	487706.83	242505.25	12.00	10.00	0.00	0.00	1.00			
25	C	487676.93	242595.87	12.00	10.00	0.00	0.00	1.00			
26	C	487683.89	242622.87	12.00	315.00	0.00	0.00	1.00			
27	C	487704.60	242631.73	12.00	290.00	0.00	0.00	1.00			
28	C	487731.41	242638.07	12.00	250.00	0.00	0.00	1.00			
29	C	487771.81	242634.28	12.00	285.00	0.00	0.00	1.00			
30	C	487754.08	242604.20	12.00	190.00	0.00	0.00	1.00			
31	C	487788.20	242600.28	12.00	119.00	0.00	0.00	1.00			
32	C	487755.89	242571.32	12.00	140.00	0.00	0.00	1.00			
33	C	487724.37	242562.31	12.00	98.00	0.00	0.00	1.00			
34	B	487634.41	242573.52	12.00	95.00	0.00	0.00	1.00			
35	B	487638.04	242602.74	12.00	285.00	0.00	0.00	1.00			
36	B	487826.28	242618.58	12.00	115.00	0.00	0.00	1.00			

Layout Continued

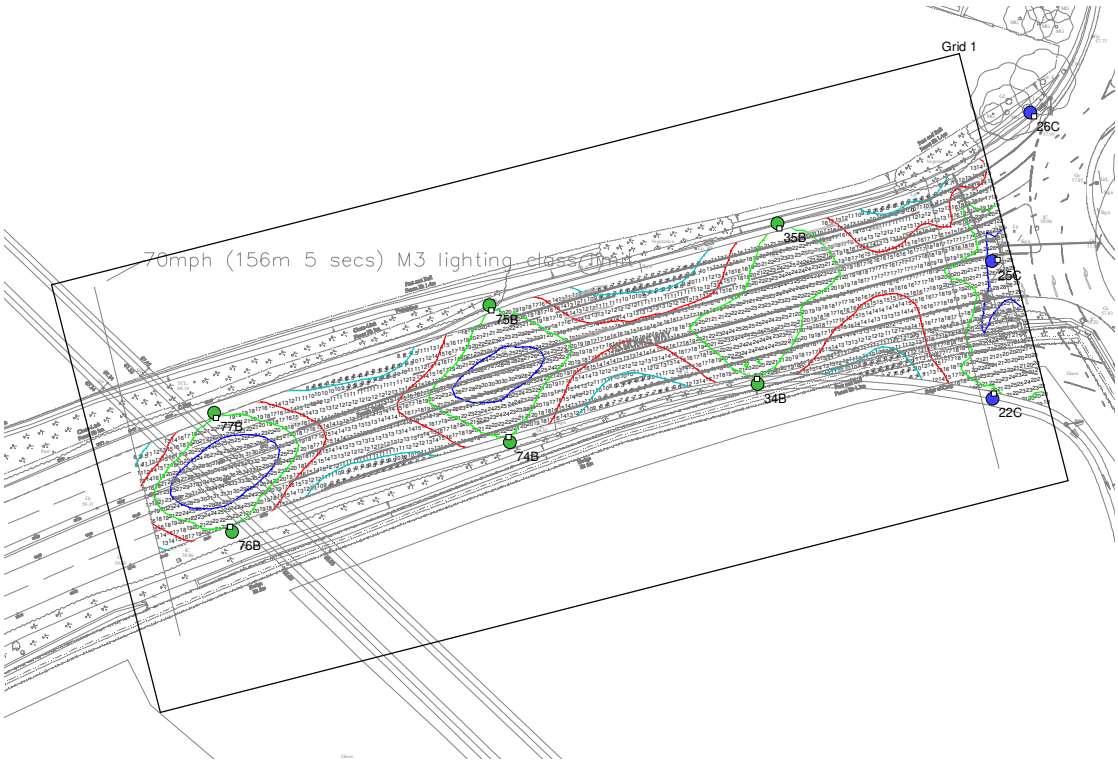
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
37	B	487815.56	242645.39	12.00	285.00	0.00	0.00	1.00			
38	A	487790.73	242069.31	12.00	10.00	0.00	0.00	1.00			
39	A	487764.74	242186.55	12.00	15.00	0.00	0.00	1.00			
40	A	487782.35	242189.51	12.00	190.00	0.00	0.00	1.00			
41	A	487787.56	242160.41	12.00	190.00	0.00	0.00	1.00			
42	A	487779.09	242128.22	12.00	12.00	0.00	0.00	1.00			
43	A	487808.86	242033.85	12.00	190.00	0.00	0.00	1.00			
44	A	487803.18	241946.96	12.00	0.00	0.00	0.00	1.00			
45	A	487816.15	241918.54	12.00	180.00	0.00	0.00	1.00			
46	A	487775.10	242231.23	12.00	195.00	0.00	0.00	1.00			
47	A	487799.36	242004.42	12.00	5.00	0.00	0.00	1.00			
48	A	487813.91	241978.76	12.00	185.00	0.00	0.00	1.00			
49	A	487801.78	241888.29	12.00	357.00	0.00	0.00	1.00			
50	A	487814.13	241859.81	12.00	180.00	0.00	0.00	1.00			
51	A	487797.50	241791.57	12.00	355.00	0.00	0.00	1.00			
52	A	487794.70	241776.38	12.00	342.00	0.00	0.00	1.00			
53	A	487826.82	241745.16	12.00	215.00	0.00	0.00	1.00			
54	A	487782.99	241751.49	12.00	300.00	0.00	0.00	1.00			
55	A	487814.93	241765.34	12.00	205.00	0.00	0.00	1.00			
56	A	487688.93	242687.29	12.00	10.00	0.00	0.00	1.00			
57	A	487680.31	242736.61	12.00	10.00	0.00	0.00	1.00			
58	A	487670.56	242789.49	12.00	10.00	0.00	0.00	1.00			
59	A	487658.65	242845.48	12.00	15.00	0.00	0.00	1.00			
60	A	487638.06	242919.62	12.00	15.00	0.00	0.00	1.00			
61	A	487629.65	242948.17	12.00	15.00	0.00	0.00	1.00			
62	A	487660.31	242947.32	12.00	170.00	0.00	0.00	1.00			
63	A	487666.66	242876.76	12.00	190.00	0.00	0.00	1.00			
64	A	487700.21	242714.48	12.00	190.00	0.00	0.00	1.00			
65	A	487678.21	242825.08	12.00	190.00	0.00	0.00	1.00			
66	A	487710.93	242671.62	12.00	191.00	0.00	0.00	1.00			
67	A	487695.37	242646.39	12.00	350.00	0.00	0.00	1.00			
68	A	487691.69	242763.81	12.00	190.00	0.00	0.00	1.00			
69	A	487644.57	242900.74	12.00	15.00	0.00	0.00	1.00			
70	B	487861.63	242657.29	12.00	290.00	0.00	0.00	1.00			
71	B	487867.48	242632.33	12.00	105.00	0.00	0.00	1.00			
72	B	487908.06	242669.04	12.00	285.00	0.00	0.00	1.00			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
73	B	487913.34	242647.40	12.00	105.00	0.00	0.00	1.00			
74	B	487589.47	242563.00	12.00	105.00	0.00	0.00	1.00			
75	B	487585.66	242587.90	12.00	290.00	0.00	0.00	1.00			
76	B	487538.95	242546.70	12.00	110.00	0.00	0.00	1.00			
77	B	487535.80	242568.34	12.00	290.00	0.00	0.00	1.00			
78	A	487647.54	242981.38	12.00	270.00	0.00	0.00	1.00			
79	A	487663.20	243000.73	12.00	345.00	0.00	0.00	1.00			
80	A	487668.49	242974.69	12.00	150.00	0.00	0.00	1.00			
81	A	487674.68	243030.21	12.00	340.00	0.00	0.00	1.00			
82	A	487717.92	242387.85	12.00	344.00	0.00	0.00	1.00			
83	A	487751.52	242387.63	12.00	185.00	0.00	0.00	1.00			
84	A	487754.58	242367.91	12.00	185.00	0.00	0.00	1.00			

Horizontal Illuminance (lux)

Grid 1



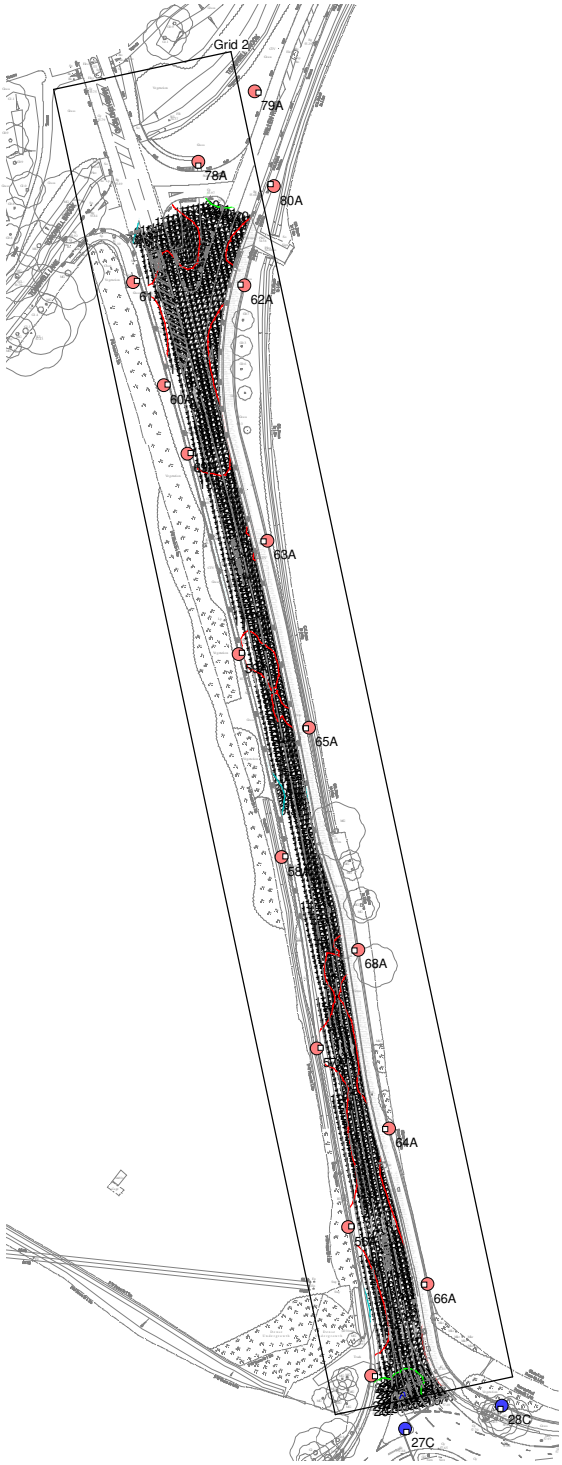
Results

Eav	17.66
Emin	7.06
Emax	36.31
Emin/Emax	0.19
Emin/Eav	0.40

7211513207

Horizontal Illuminance (lux)

Grid 2



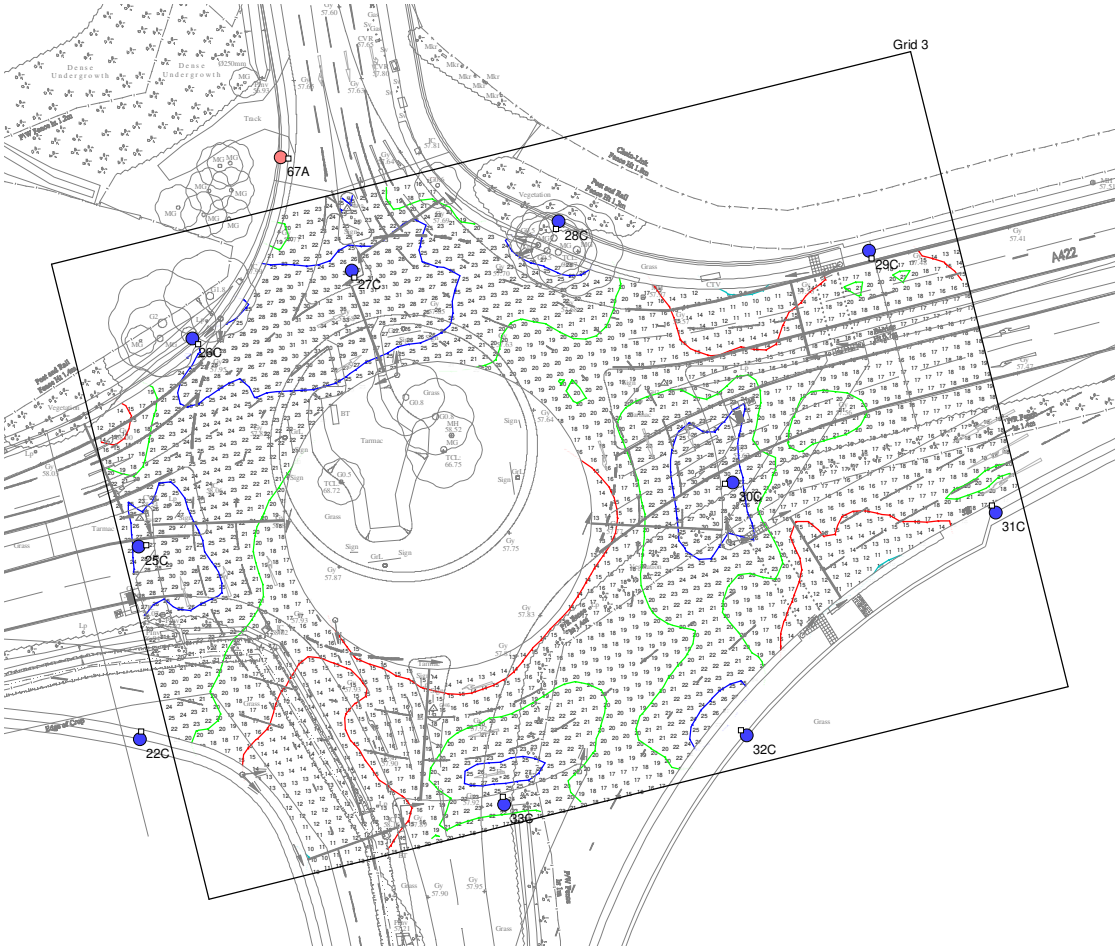
Results

Eav	15.17
Emin	7.93
Emax	25.14
Emin/Emax	0.32
Emin/Eav	0.52

7211513207

Horizontal Illuminance (lux)

Grid 3



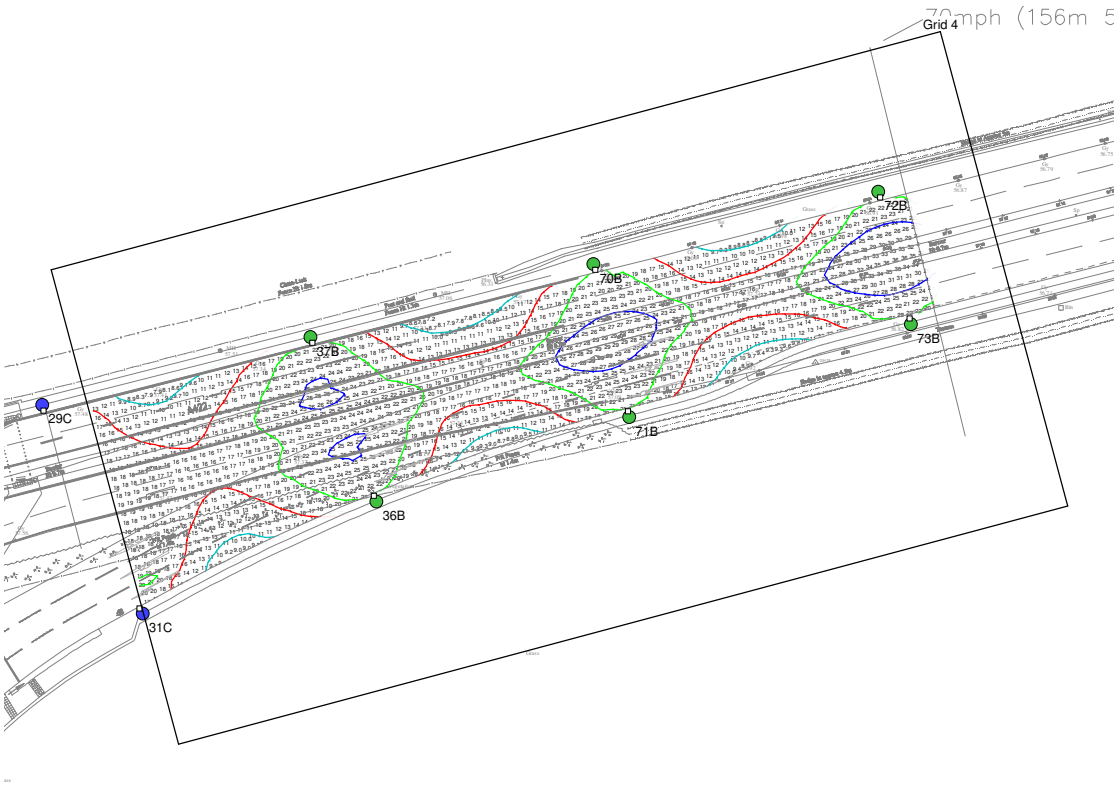
Results

Eav	20.05
Emin	9.47
Emax	34.69
Emin/Emax	0.27
Emin/Eav	0.47

7211513207

Horizontal Illuminance (lux)

Grid 4



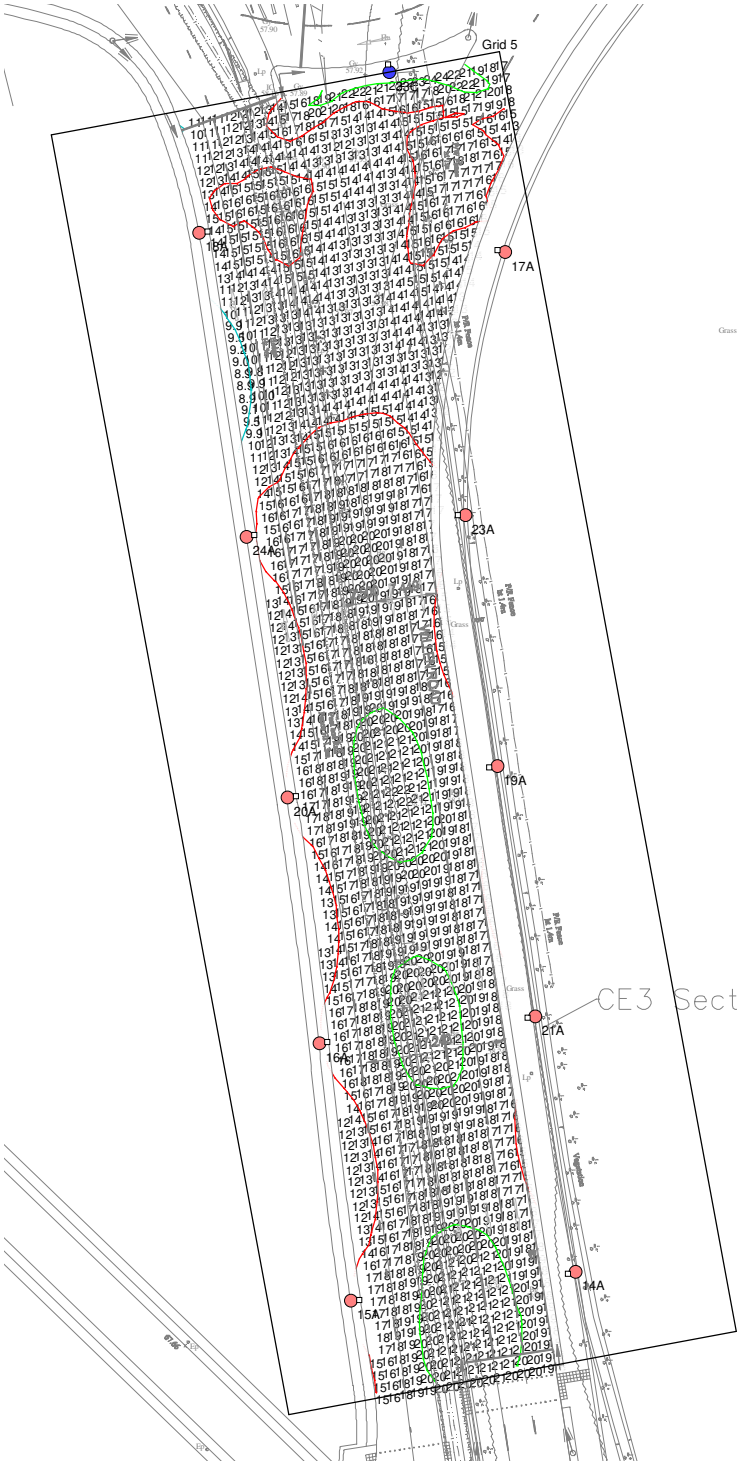
Results

Eav	18.14
Emin	7.19
Emax	35.80
Emin/Emax	0.20
Emin/Eav	0.40

7211513207

Horizontal Illuminance (lux)

Grid 5



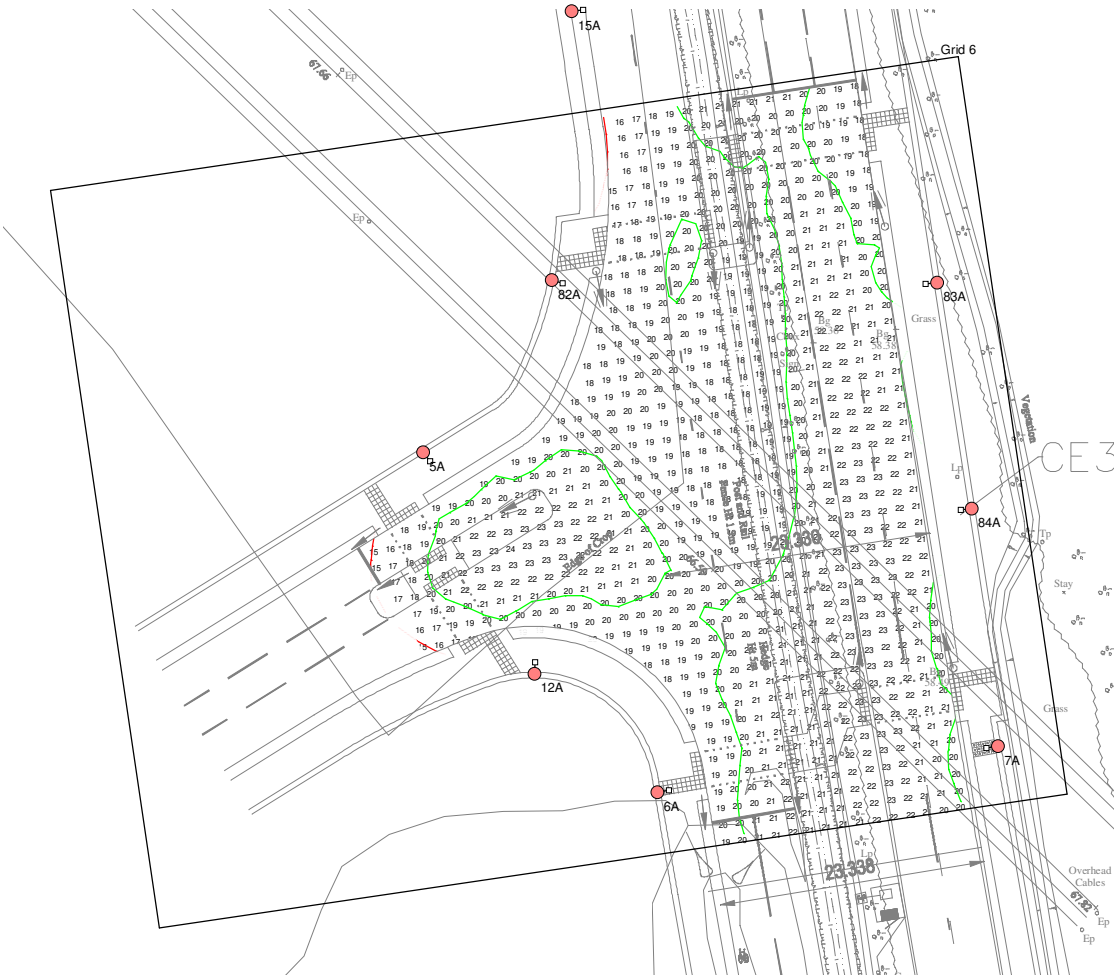
Results

Eav	16.65
Emin	8.85
Emax	23.98
Emin/Emax	0.37
Emin/Eav	0.53

7211513207

Horizontal Illuminance (lux)

Grid 6



Results

Eav	20.21
Emin	14.67
Emax	23.55
Emin/Emax	0.62
Emin/Eav	0.73

7211513207

Horizontal Illuminance (lux)

Grid 7

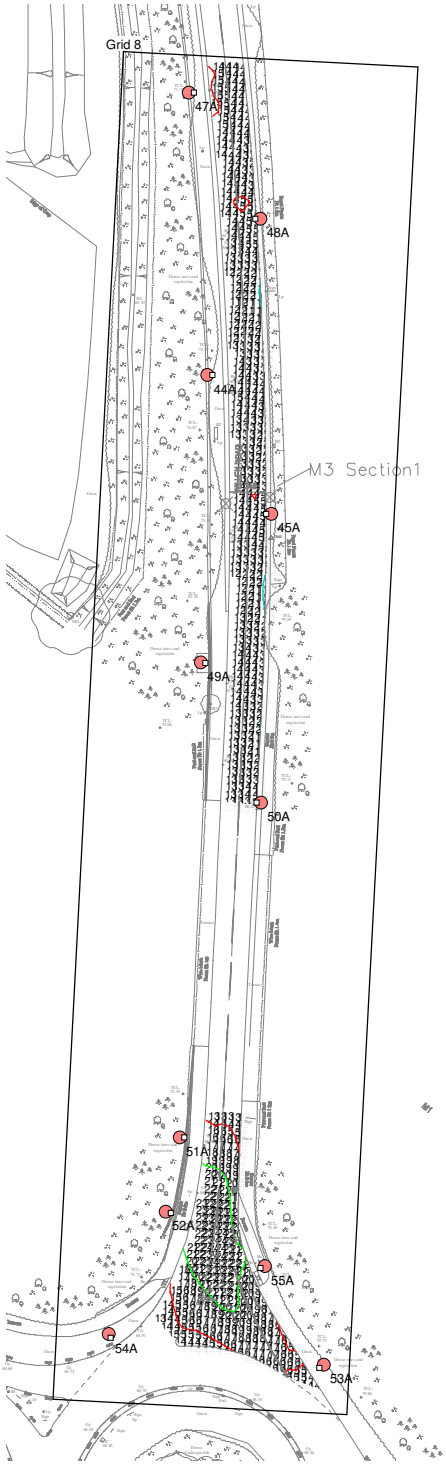
Results

Eav	16.81
Emin	7.29
Emax	24.34
Emin/Emax	0.30
Emin/Eav	0.43

7211513207

Horizontal Illuminance (lux)

Grid 8



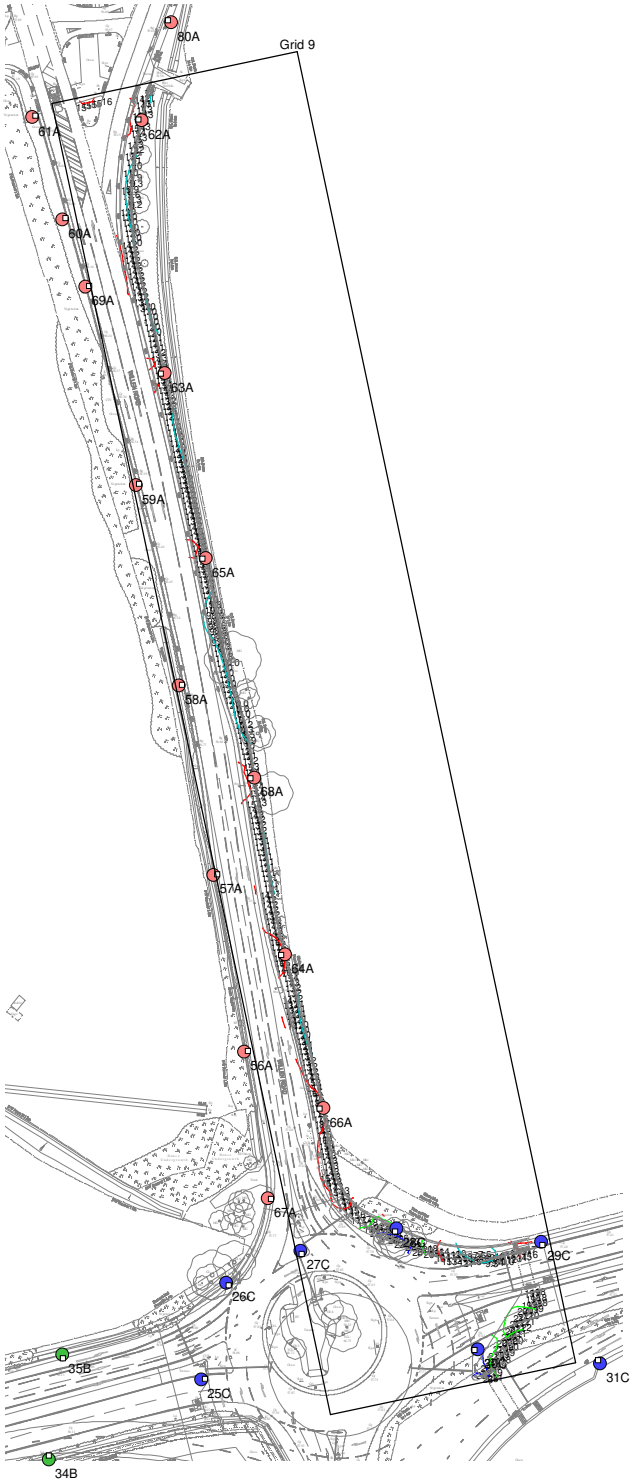
Results

Eav	15.05
Emin	9.82
Emax	24.12
Emin/Emax	0.41
Emin/Eav	0.65

7211513207

Horizontal Illuminance (lux)

Grid 9



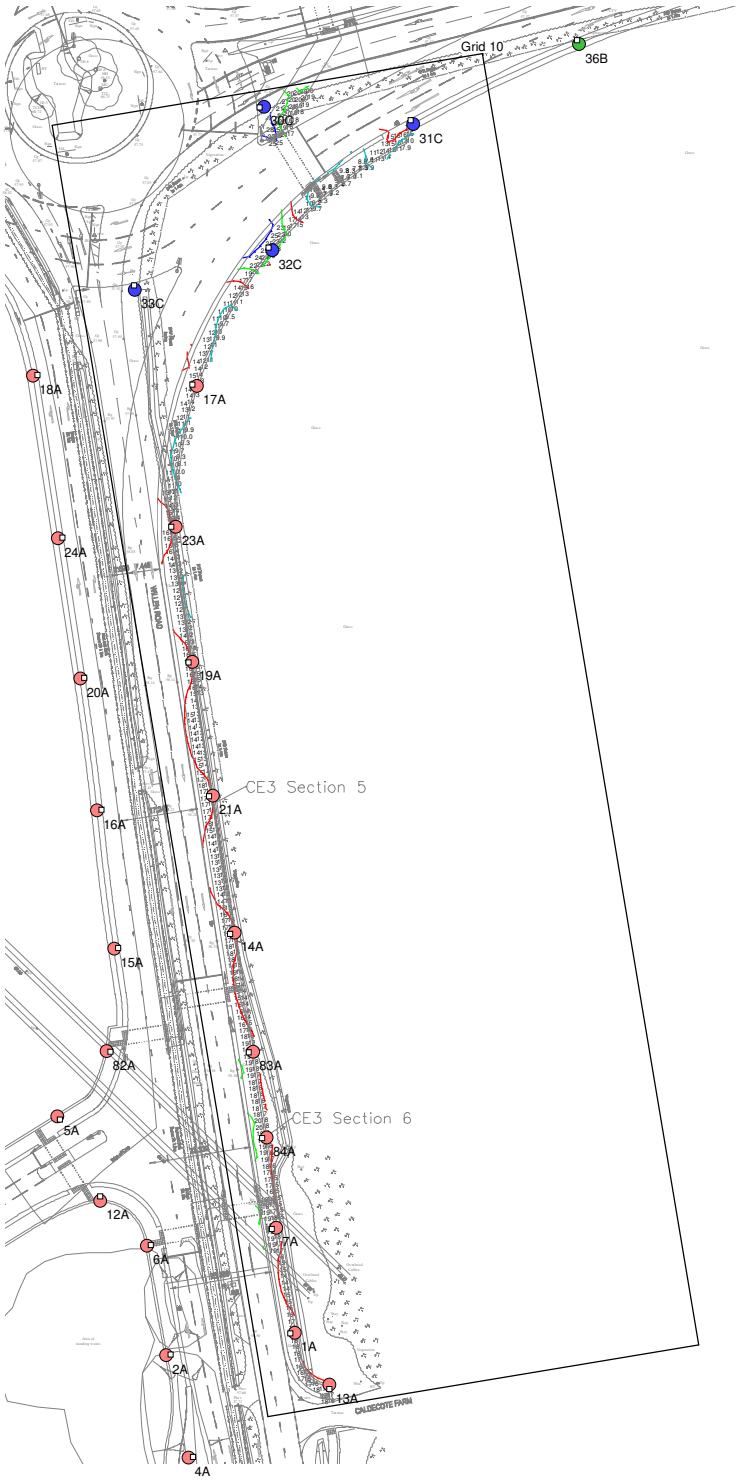
Results

Eav	13.87
Emin	7.45
Emax	27.84
Emin/Emax	0.27
Emin/Eav	0.54

7211513207

Horizontal Illuminance (lux)

Grid 10



Results

Eav	15.06
Emin	6.69
Emax	27.55
Emin/Emax	0.24
Emin/Eav	0.44

7211513207

Horizontal Illuminance (lux)

Grid 11

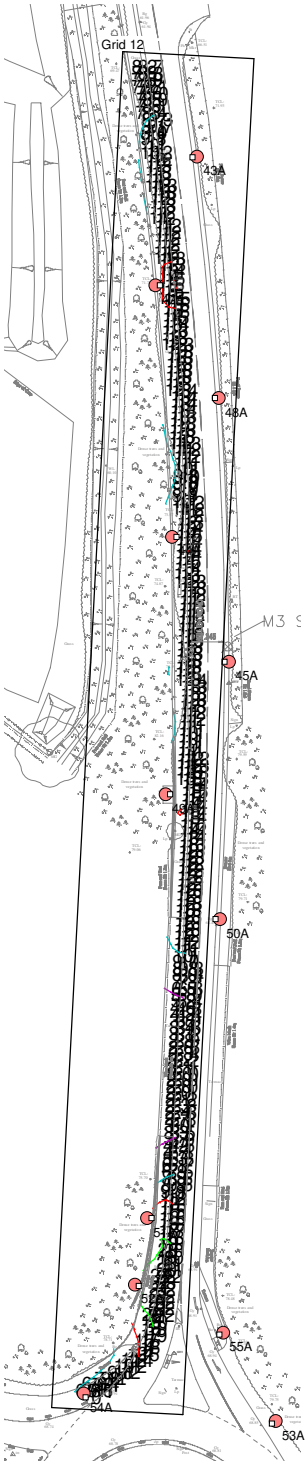
Results

Eav	14.13
Emin	3.87
Emax	20.78
Emin/Emax	0.19
Emin/Eav	0.27

7211513207

Horizontal Illuminance (lux)

Grid 12



Results

Eav	11.53
Emin	1.95
Emax	22.76
Emin/Emax	0.09
Emin/Eav	0.17

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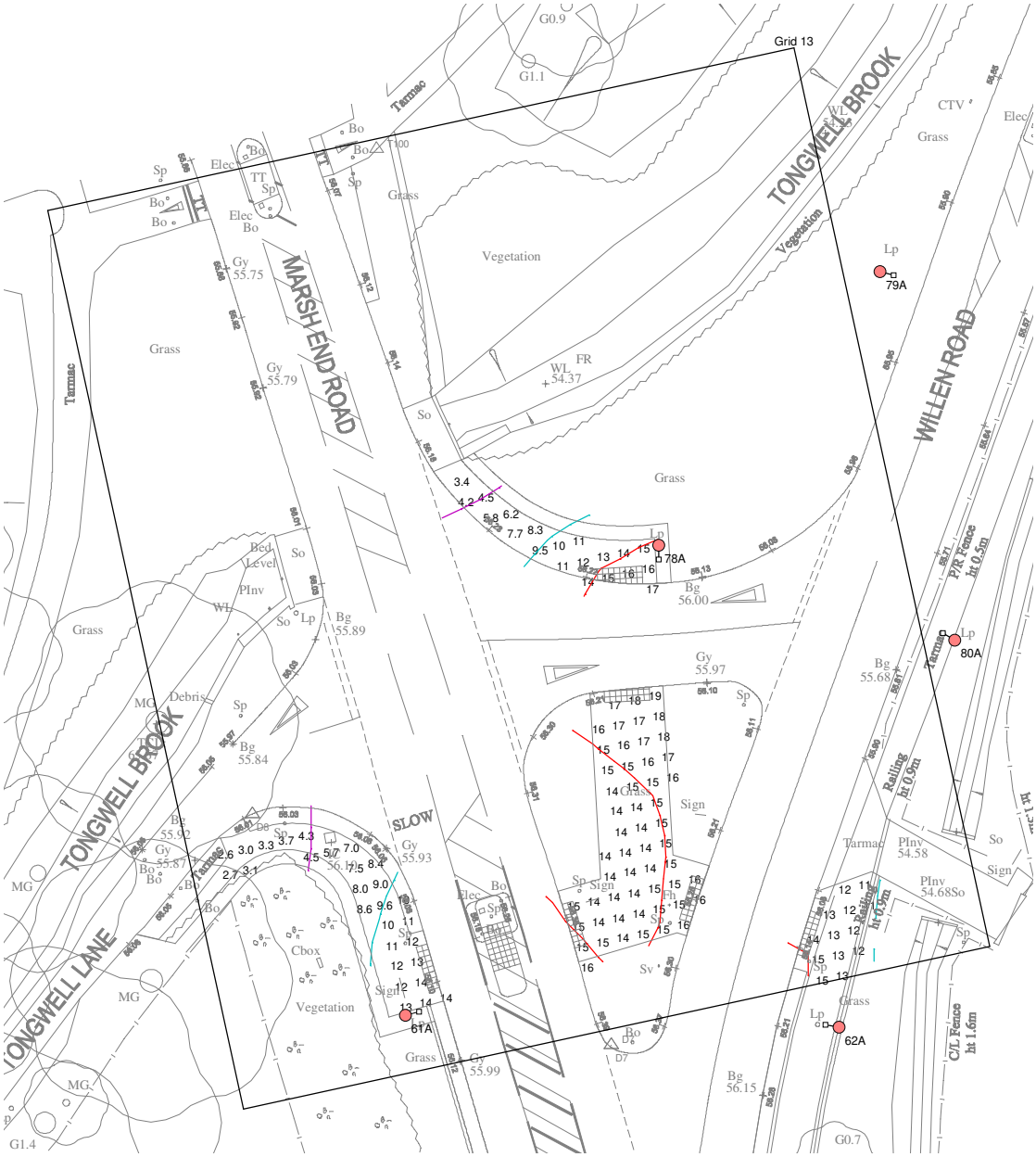
Horizontal Illuminance (lux)

Grid 13



Results

Eav	12.50
Emin	2.61
Emax	18.52
Emin/Emax	0.14
Emin/Eav	0.21

7211513207

APPENDIX F

WILLEN ROAD CROSSING ASSESSMENT

Pedestrians typically need a gap in the traffic of 4-6 seconds to cross a 7m wide road at normal urban vehicle speeds. Willen Road is wider than this and would be subject to a 40mph speed limit. Therefore, the required gap in the traffic would increase. As shown in the table below, based on the existing two-way traffic flows on Willen Road (from the five-day average from the 2017 ATC data), there are insufficient gaps in the traffic between 7am and 7pm. Furthermore, the length of gaps in the traffic will decrease further with the background traffic growth over time and the addition of the development traffic. Therefore, a signal-controlled crossing is required.

Time	Five-day average two-way traffic on Willen Road in 2017	Gap between vehicles (in seconds)
0000	36	100
0100	19	189
0200	15	240
0300	14	257
0400	29	124
0500	143	25
0600	416	9
0700	1384	3
0800	1915	2
0900	1115	3
1000	744	5
1100	768	5
1200	838	4
1300	905	4
1400	958	4
1500	1083	3
1600	1262	3
1700	1219	3
1800	1057	3
1900	631	6
2000	417	9
2100	291	12
2200	231	16
2300	99	36

APPENDIX G

WALKING, CYCLING AND HORSE RIDING ASSESSMENT REVIEW – ASSESSMENT REPORT

now part of

Stantec

Caldecote Farm, Newport Pagnell

Walking, Cycling & Horse-Riding Assessment Report

On behalf of **Segro Newport Pagnell Ltd**

Project Ref: 38748/2003 | Rev: A | Date: 5th July 2018

Office Address: Peter Brett Associates LLP, Prospect Court, Courteenhall Road, Blisworth, NN7 3DG
T: +44 (0)1604 878300 E: northampton@peterbrett.com

Document Control Sheet

Project Name: Caldecote Farm, Newport Pagnell

Project Ref: 38748

Report Title: Walking, Cycling & Horse-Riding Assessment Review

Doc Ref: 001 Rev A

Date: 5th July 2018

	Name	Position	Signature	Date
Prepared by:	Douglas Pielage	Graduate Engineer	[redacted]	5th July 2018
Reviewed by:	James Horne	Principal Engineer		5th July 2018
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
A	21st May 2019	Report updated in response to alterations to development proposals	Jordan Balzer	[redacted]	[redacted]

Contents

1 Introduction

1.1 Peter Brett Associates LLP (PBA) have been commissioned by Segro Newport Pagnell Ltd to prepare proposals to provide new and improved highway infrastructure required to serve and support a proposed new commercial development in Newport Pagnell.

1.2 The development proposals to be submitted as part of a full planning application comprising of the erection of two storage and distribution units (Class B8) with associated access, car parking, servicing, landscaping, earthworks and drainage.

1.3 The highway improvement scheme proposals are indicated on the following drawings which have been provided within Appendix A:-

- 38748/100/007 Rev A – 'Proposed Site Access Signalised Junction – General Arrangement';
- 38748/100/008 Rev A – 'Proposed Marsh End Signalised Roundabout – General Arrangement';

1.4 Willen Road is a rural, single carriageway, bound on both sides by grassed verges. It is subject to the national speed limit (60mph) and illuminated by a system of street lighting. There are 2No. existing on-carriageway bus stops along Willen Road, located to the south of the proposed development signalised junction.

1.5 H3 Monks Way and A422 are rural, dual carriageways, bound on both sides by grassed verges. They are subject to the national speed limit (70mph) and only illuminated by a system of street lighting at the Marsh End Road Roundabout.

2 Scheme Description and Background

2.1 Background

2.1.1 The scheme is a highway improvement scheme that will have a permanent impact on Milton Keynes Council's (MKC) road network. In order to ensure the needs for Non-Motorised Users (NMUs) are fully considered as part of the scheme's development, MKC have confirmed that a 'Walking, Cycling & Horse-Riding Assessment', as detailed by HD 42/17 – 'Walking, Cycling & Horse-Riding Assessment and Review', needs to be undertaken.

2.1.2 In accordance with Table 2/8 of HD 42/17, the scale of the scheme has been assessed by the Lead Assessor, and is considered to qualify as a 'small' scheme (for the purposes of this assessment). This has also been confirmed by MKC.

2.1.3 Therefore, the scheme will be subject to a 'Walking, Cycling & Horse-Riding Assessment' during the planning stage of the proposed highway scheme. The need for a subsequent 'Walking, Cycling & Horse-Riding Review' at the detailed design stage will be determined by MKC.

2.1.4 As-built records indicated that the original H3 Monks Way / A422 bypass was constructed in the 1976. The A422 was upgraded to a dual carriageway in 1990. Willen Road is a historic route that was present on 1945 aerial photos.

2.2 Proposed Highway Scheme

2.2.1 A new 3-arm signalised junction is to be provided on Willen Road to serve the commercial development (western arm) and maintain access to the farm and residential buildings (eastern arm) known as 'Caldecote Farm' and / or 'Glenfield'. Also, the existing H3 Monks Way / A422 / Willen Road 4-arm roundabout is to increased in size and signalised in order to in order to accommodate the likely increase in traffic flows generated by a proposed commercial development.

2.2.2 The scheme objectives include improving conditions for walking and cycling as the current route has limited facilities and connections for NMUs. This is likely to include:-

- Off carriageway shared use footway / cycle tracks, referred to as a 'Redways' in Milton Keynes;
- Toucan style controlled crossings at the 2No new signalised junctions;
- 2No. new bus stops required to serve the development;

2.3 Study Area

Figure 1 indicates the approximate study area for this Assessment Report. The assessment area has been set by the Lead Assessor and covers:-

- H3 Monks Way – Dual carriageway;
- A422 – Dual carriageway;
- Willen Road (North) – Northern Arm of the existing Marsh End Road roundabout up to its junction with Marsh End Road;
- Willen Road (South) – Southern Arm of the existing Marsh End Road roundabout down to its junction with the Tongwell Roundabout;
- Surrounding area within a 1km radius of the site;

Figure 1 – Extents of Study Area

3 Walking, Cycling and Horse-Riding Assessment

3.1 Review of Walking, Cycling and Horse-Riding Policies and Strategies

3.1.1 The following listed documents have been reviewed as part of this Assessment:-

- Local Transport Plan 3 for Milton Keynes;
- Draft Mobility Strategy 2018 - 2036 for Milton Keynes;
- Transport Vision and Strategy for Milton Keynes;
- LTP3 Review – Addendum 1 (adopted 13th June 2012);
- MKC's Cycling Interactive Mapping Service;
- Bus Strategy for Milton Keynes;
- Bus Information Strategy for Milton Keynes;

3.2 Collision Data

3.2.1 Recorded Injury Collision (RIC) data has been obtained from the CrashMap for 4½ years (2014 to 2018 (first 6 months)) – Refer to Appendix B.

3.2.2 Marsh End Road Roundabout

Within the past 4½ years, 8 RICs (2 serious, 6 slight) have been recorded at this existing roundabout:-

- A422 Approach:-
  - 5No collisions, 1 occurred in the wet, 1 occurred during the hours of darkness;
  - 3No. RICs involved Cyclists being struck by vehicles failing to Give Way;
  - 1No. Shunt type collision involved 2No. 50cc motorbikes at the junction;
  - 1No. Shunt type collision on the immediate approach;

- H3 Monks Way Approach:-
  - 1No. Shunt type collision, occurred in the wet at the junction;

- Willen Road (Southern Arm) Approach:-
  - 2No collisions, both when the road was dry and during daylight hours;
  - 1No. Failed to Give Way;
  - 1No. Single vehicle collision (colliding with a tree);

3.2.3 Willen Road (Northern Arm)

Within the past 4½ years, 1 RIC has been recorded along Willen Road (North). A review of this RIC has indicated that the collision (slight) occurred at midnight in October 2014, when the road surface was wet. The RIC was potentially a head-on type collision.

3.2.4 Willen Road (Southern Arm)

Within the past 4½ years, 1 RIC has been recorded along Willen Road (South). A review of this RIC has indicated that the collision (slight) occurred during the early evening in January 2014, when the road surface was dry and the weather fine. The RIC appears to be a shunt type collision (potentially during queuing traffic) when a bus drove into the back of a car, with the knock on effect involving 2 more vehicles.

3.2.5 It is considered that 10 RICs in 4½ years does not constitute a significant collision problem at these locations with the current national speed limits in place. However, it is noted that 3No. of these collisions involved Cyclists on the circulatory carriageway being struck by motorists entering the roundabout. The proposed design would look to provide facilities to reduce the likelihood of these collisions occurring.

3.3 Public Transport Services and Interchange Information

3.3.1 Public Transport Mode – Bus Service

3.3.2 Milton Keynes Council's (MKC's) Urban Bus Route Map (November 2017), indicates that there are currently 2No. bus routes operating along Willen Road, referred to as:-

- Bus Route 1; and
- Bus Route C10;

3.3.3 The Route 1 service runs past the site in the evenings (between 8pm and midnight) and on Sundays (between 9am and midnight), at an hourly frequency. Bus Route C10 provides an hourly service between 0630 and 1900 hours. There are 2No. existing on-carriageway bus stops along Willen Road, located to the south of the proposed junction (No supporting footways or Bus shelters). These existing bus stops are indicated on the Urban Bus Route Map as not having real-time information facilities.

Figure 2 – Bus routes with a service frequency of 1 hour or less, within the local area of the Site (Urban Bus Route Map)

3.4 Trip Generators

3.4.1 Key Trip Generators and Local Amenities

The following listed places of interest have been identified as existing trip generators within the area local to the Site:-

- 'Caldecote Farm / Glenfield' (Residential / Employment);
- Existing Sand and Gravel Quarry;
- Traveller Site;
- Newport Pagnell Football Club and Sports Field;
- Kingfisher Park, Kingfisher Surgery and The Kingfisher Pub;
- Ousedale School Only Campus, Green Park School, Tickford Park Primary School, Willen Primary School;
- Tongwell Business Park;
- Willen Hospice;
- Willen Lake and Tongwell Lake;

3.4.2 Future Trip Generators

The following listed places of interest have been identified as potential future trip generators within the area local to the Site:-

- The Newlands commercial development proposed for the Site;
- Linear Park Extension (Figure 3);
- New community facilities (indicated by the light pink areas on Figure 3 below), adjacent to the proposed Linear Park Extension;

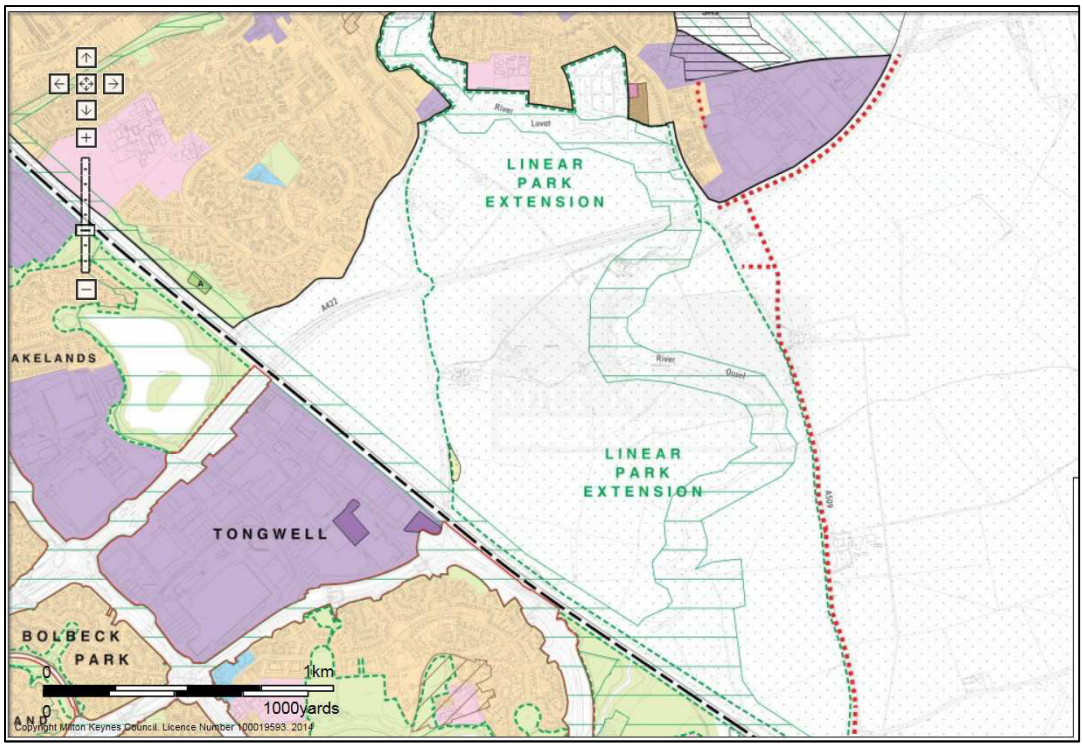


Figure 3 – Extract from MKC Local Development Plan

3.5 **Site Visit**

3.5.1 The site visit was undertaken by James Horne (Lead Assessor) and Douglas Pielage (Assessor) on Thursday 1st December 2017 between 10:30 and 14:00. The site visit took the form of a walking survey along:-

- Tongwell Lane – Existing footpath / cycle track;
- Alexandra Drive – Redway link to Tongwell Lane;
- Willen Road (adjacent to Sports Field – East of Marsh End Road) – Existing footway / cycle track;
- H3 Monks Way – Highway grassed verges;
- The A422 – Highway grassed verges;
- Willen Road (northern and southern lengths) – Highway grassed verges;
- Tongwell Roundabout – Existing Redway Super Route and 'Jug Handle' uncontrolled crossing point on the Willen Road arm of this existing roundabout;

3.5.2 The level of use and condition / suitability of each route during the site visit were recorded and potential improvements, repairs and connections were noted. The weather during the site visit was dry and overcast with the temperature 5°C (approx.). The road and path surfaces were all noted to be dry. The primary findings of the site visit were:-

A. Several Pedestrians and Equestrians were observed using Tongwell Lane;

B. Within the parcel of land bound by the M1, H3 Monks Way, Willen Road (North) and Tongwell Lane, horses are being kept;

C. Several Cyclists were observed using Willen Road, as well as the Marsh End Road Roundabout;

D. No evidence of NMU movements were observed along H3 Monks Way and the A422 dual carriageways;

E. No evidence of Pedestrians using the grassed verges adjacent to Willen Road were observed;

3.6 **Consultation with Key Stakeholders**

3.6.1 As part of the WCHRA process, we have undertaken liaison with representatives from MKC's Public Transport (Stuart Simmonds – Public Transport Technical Lead), and subsequently MKC's Road Safety Team (Kevan Paradine – Senior Road Safety Engineer), regarding the proposed bus stop provisions. A copy of our correspondence has been provided in Appendix C. This liaison has informed the proposed preliminary design.

3.6.1 We have also undertaken liaison with representatives from MKC's Senior Transport Planner – Cycling and Events Management (Sara Randle) regarding the proposed cycle facilities. A copy of our correspondence has been provided in Appendix D. This liaison has also informed the proposed preliminary design.

3.7 Existing Pedestrian, Cyclist and Equestrian Facilities within the Local Area

The following Pedestrian, Cyclist and Equestrian facilities within the scheme extents have been identified.

3.7.1 Pedestrian Facilities

A. Willen Road (South and North) – No footway facilities. 2No. existing bus stops are located opposite the entrance to the Traveller's Site. However, no areas of hardstanding or bus shelters have been provided;

B. H3 Monks Way, A422, Marsh End Road, Tongwell Lane and Alexandra Drive do not have any formal Pedestrian only facilities;

C. There is an existing public footpath that crosses the A422 through a gap in the Road Restraint System approximately 300m east of the Marsh End Roundabout (refer to Para 3.8.1 'A' and Figure 4);

3.7.2 Cyclist Facilities

A. Willen Road (South) – No Redways have been provided, however, a 'Jug Handle', with an uncontrolled crossing point, allows Cyclists travelling southbound to cross Willen Road (South) and access the existing 3m wide (approx.) Redway Super Route adjacent to the Tongwell Roundabout;

B. Willen Road (North) – No Redways have been provided. Traffic Sign Diag 950 – 'Cycle route' has been erected to warn northbound traffic that Cyclists may be joining Willen Road / Marsh End Road from Tongwell Lane;

C. Marsh End Road, Willen Road (adjacent to Sports Field – East of Marsh End Road), Tongwell Lane and Alexandra Drive all have Redways or are signed shared use facilities adjacent to the carriageways;

D. H3 Monks Way and A422 do not have any formal cycle only facilities;

3.7.3 Equestrian Facilities

A. There are no dedicated Equestrian facilities within the scheme extents. However, Equestrians have been observed to be using Tongwell Lane – Existing footpath / cycle track;

3.8 Existing Pedestrian, Cyclist and Equestrian Facilities beyond Scheme Extents and Links to County / Strategic Networks

The following Pedestrian, Cyclist and Equestrian facilities have been identified. These facilities are outside the immediate scheme extents, but are within the study area:-

3.8.1 Pedestrian and Cyclist Facilities

A. As previously referenced, there is an existing public footpath that crosses the A422 through a gap in the Road Restraint System approximately 300m east of the Marsh End Roundabout;

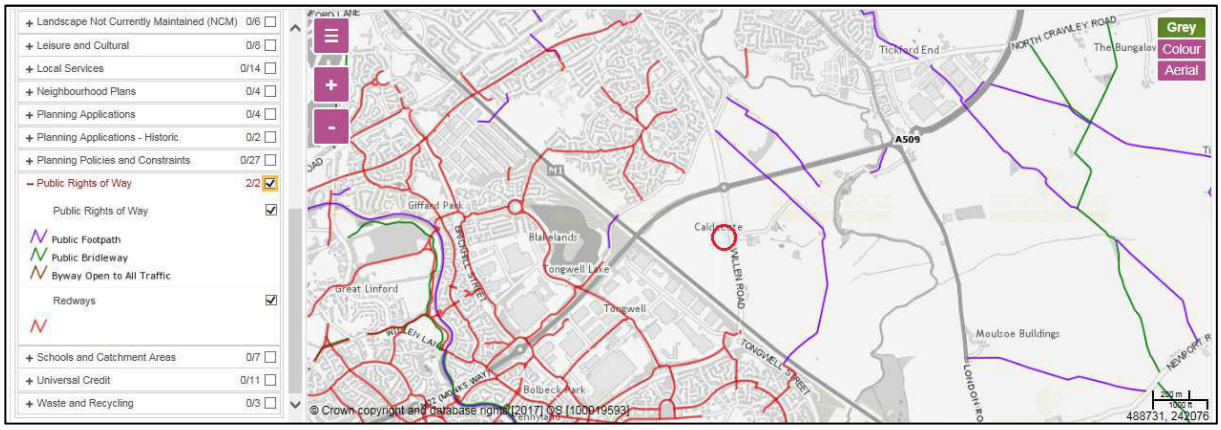


Figure 4 – Public Rights of Way Map (derived from MKC's Definitive Map)

B. The Redway network in the nearby vicinity of the site can also be seen on Figure 4;

C. There are 2No. National Cycle Routes that pass through Milton Keynes and are within the nearby vicinity of the Site. The routes are referenced National Cycle Route 6 and 51;

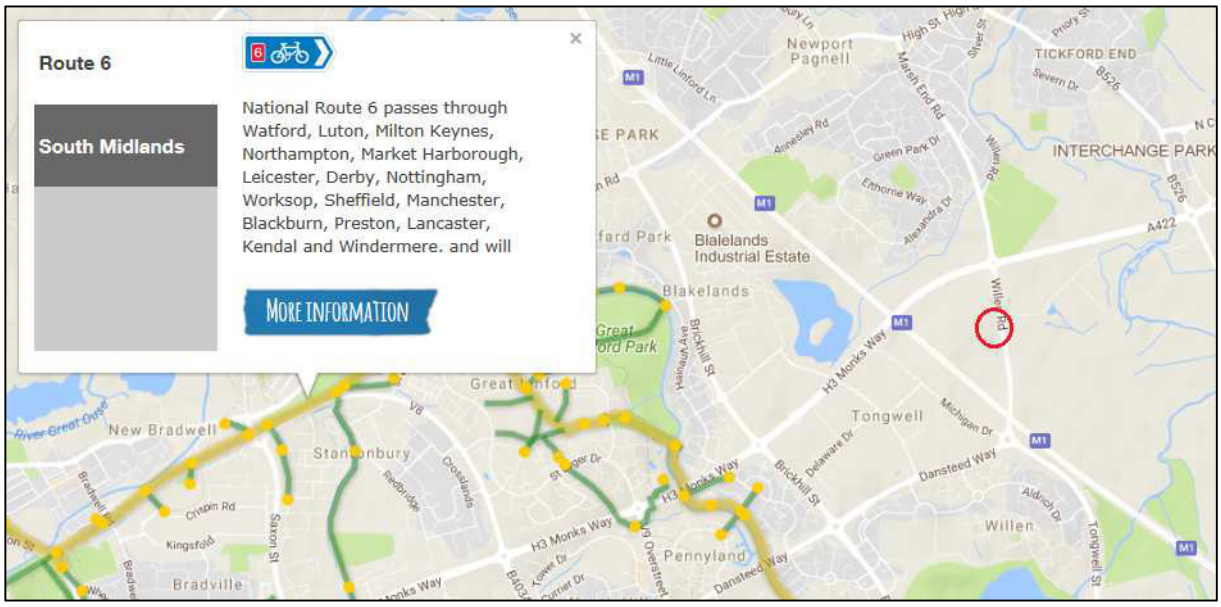


Figure 5 – National Cycle Route 51 (Sustrans Map)

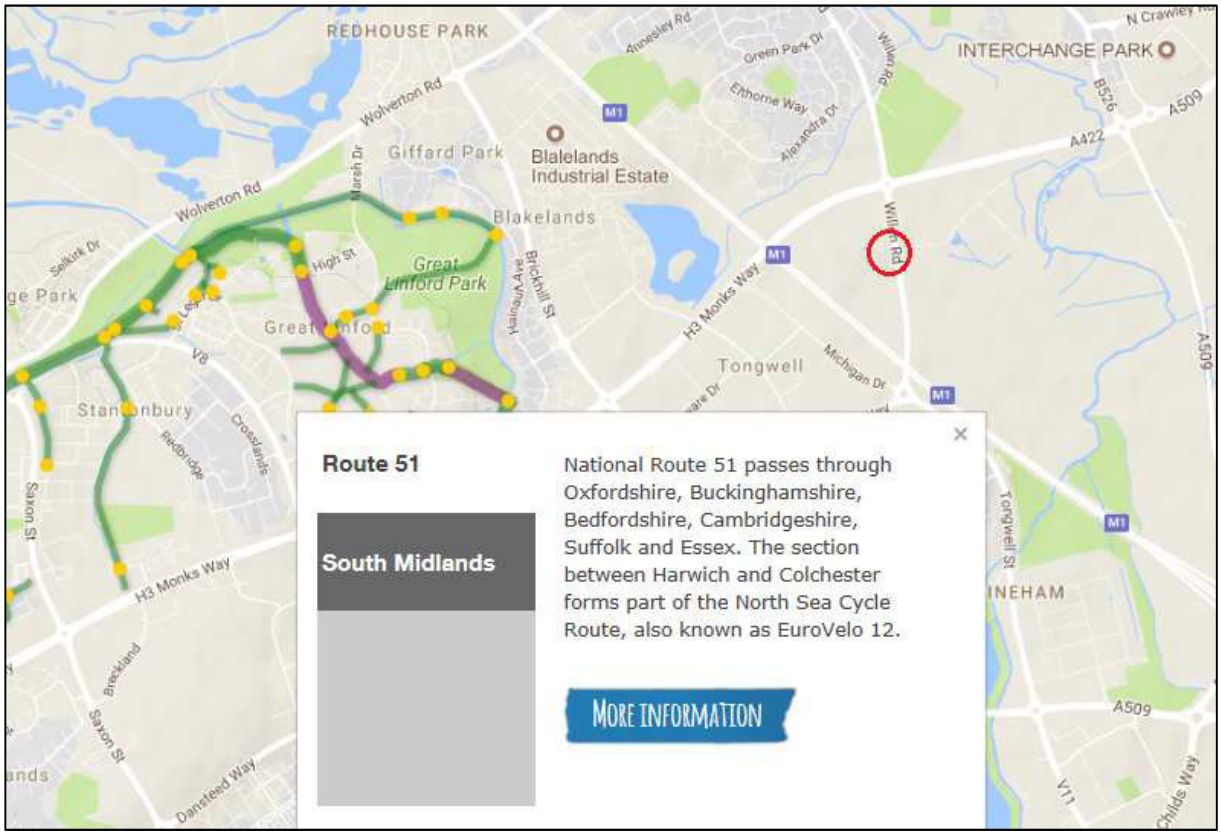


Figure 6 – National Cycle Route 6 (Sustrans Map)

3.8.2 Equestrian Facilities

A. There are no Equestrian Facilities within the nearby vicinity of the scheme extents;

4 User Opportunities

4.1 The opportunities highlighted below are considered to be relevant to the highway scheme and should be considered by the wider Design Team throughout the progression of the scheme design in addition to any further opportunities that may arise through the ongoing development of the design phase(s).

4.2 Pedestrian and Cyclist Specific Opportunities

4.2.1 Opportunity 1
MKC have indicated that in order to promote the signalised junction serving the development, the speed limit on Willen Road would need to be reduced from national speed limit (60mph) to 40mph. A reduced speed limit would generally present a safer environment for NMUs. This reduced speed limit will be taken across the existing Marsh End Road Roundabout (located on a high speed dual carriageway), and onto Willen Road (North).

4.2.2 Opportunity 2
Provide off carriageway provisions for Pedestrians and Cyclists to travel to and from the proposed development along Willen Road. These facilities will also connect:-

- The existing Redway Super Route at the Tongwell Roundabout (southern end of Willen Road);
- To the existing Redway adjacent to Marsh End Road (northern end of Willen Road);

This will take the form of a 3m wide shared use footway / cycle track along the total of its length.

4.2.3 Opportunity 3
LTN 1/12 – 'Shared Use Routes for Pedestrians and Cyclists' states that shared use routes alongside high speed roads (which are considered by LTN 1/12 to be roads with 85th percentile speeds of 35mph or more). Therefore, a 1m buffer zone (grassed verge) has been provided between the proposed shared use footway / cycle track and the carriageway (where possible). This provision is to improve user safety.

Furthermore, TA 90/05 – 'The Geometric Design of Pedestrian, Cycle and Equestrian Routes' also states that it is desirable to provide physical separation between NMU routes and carriageways. Para 7.22 states that the recommended preferred separation between NMU routes and the carriageway is 1.5m, with an acceptable separation of 0.5m. There should be no street furniture or vegetation (except grass) within the separation distance.

4.2.4 Opportunity 4
Toucan style controlled crossing points will be provided at the proposed Willen Road Signalised Junction and Marsh End Road Signalised Roundabout. The layout of these junctions should be informed by the specific needs of Pedestrians and Cyclists. Appropriate tactile paving, widths, crossing widths, left / right staggers (were required), etc. will be considered and provided as appropriate. It is considered that these proposals will reduce the likelihood of the 3No. injury collisions recorded where Cyclists on the circulatory carriageway of the existing roundabout have been struck by motorists entering from the A422 approach (Para 3.2.2).

Following further liaison with MKC's Senior Transport Planner – Cycling and Events Management, the scheme proposals have been amended to:-

- Provide a Toucan crossing across the development access arm without a stagger. The phasing and staging of this proposed signalised junction has also been amended to indicate that this crossing will be undertaken in 1 movement rather than 2;
- Provide an additional Toucan crossing across the southern arm;

These measures have been undertaken in order to reduce the journey time for cyclists traveling along the Willen Road route from Milton Keynes to Newport Pagnell and vice versa.

4.2.5 Opportunity 5
Originally, on-carriageway bus stops, including bus shelters, were to be provided as per 'Bus Stop Scheme Layout SS2' of MKC's Draft 'A Highway Guide for Milton Keynes'. This proposal was discussed further with MKC's Public Transport, and subsequently Road Safety Team (refer to Appendix C). However, since the January 2018 email correspondence with MKC, the scheme proposals have been updated in order to provide lay-by style bus stops.

4.2.6 Opportunity 6
Following liaison with MKC's Senior Transport Planner - Cycling and Events Management (refer to Appendix D), the scheme proposals have been updated to indicate the alignment of the Redways being taken around the back of the Bus Shelters, in order to reduce the potential for conflict between Cyclists, and Pedestrians entering / exiting buses.

Furthermore, and following further liaison with MKC's Senior Transport Planner – Cycling and Events Management, all proposed Redways have been provided with a minimum width of 3m. **NB** the physical width of the Redway across the existing M1 overbridge will be 3m (without a buffer zone) as per the width of the current paved area. MKC have confirmed no additional works are required across the overbridge to increase the width of the paved area.

4.2.7 Opportunity 7
Cyclists who wish to remain within the carriageway of Willen Road may also benefit from the option to exit the carriageway prior to the 2No. signalised junctions. Therefore, short lengths of dropped kerbs, with appropriate road markings, will permit Cyclists to exit the carriageway and enter the shared use facilities in order to access the Toucan crossings.

A similar cycle exit accessing the proposed Redway on the westbound A422 approach (prior to the Toucan crossing) to the proposed H3 Monks Way / A422 / Willen Road Signalised Roundabout.

4.2.8 Opportunity 8
The proposed shared used footway / cycle track adjacent to Willen Road will cross the existing bridge over the M1. The height of the existing western bridge parapet over the M1 is 1m. However, the desirable minimum for cycle use is 1.4m as per Table 2.5.3 of Interim Advice Note 195/16 – 'Cycle Traffic and the Strategic Road Network'. Therefore, we would look to increase the height of this bridge parapet.

4.2.9 Opportunity 9
Any new or existing traffic signs associated with the proposed junctions (directional, warning, regulatory, etc.) will be located so Pedestrians and Cyclists are not obstructed. MKC's Senior Transport Planner – Cycling and Events Management, has requested a minimum offset of 0.5m. Mounting heights for these signs will be specified to reflect Pedestrians and Cyclists requirements as per Charter 1 of the Traffic Signs Manuals.

4.2.10 Opportunity 10
Following receipt of additional topographical survey, the scheme proposals have now been updated to indicate how the proposed Redway on the eastern side of Willen Road (North) connects with the existing facilities at this location, notably:-

- Tongwell Lane;
- The existing uncontrolled crossing point north of Tongwell Lane; and
- The existing signed shared use footway / cycle track on the eastern side of Willen Road (existing 30mph length) adjacent to the Sports Ground;

Please note that the above provides a response to comments received from MKC's Senior Transport Planner – Cycling and Events Management (refer to Appendix D).

4.2.11 Opportunity 11
The scheme proposals do not introduce any potential hazards to Pedestrians and Cyclists who use H3 Monks Way and the A422.

4.3 Equestrian Specific Opportunities

4.3.1 Opportunity 1
The proposed works to install a foul water rising main across Tongwell Lane on to Alexandra Drive (via the existing Redway link) does not introduce any potential hazards for Equestrians who use Tongwell Lane.

5 Walking, Cycling and Horse-Riding Assessment Team Statement

As Lead Assessor, I confirm that this Walking, Cycling & Horse-Riding Review Report has been compiled in accordance with HD 42/17 and thus contains the appropriate information for the wider Design Team. The Walking, Cycling & Horse-Riding Assessment was undertaken by the following Assessment Team:-

Walking, Cycling & Horse-Riding Lead Assessor

James Horne
TMICE
Principal Engineer

Signed: [redacted]

Date: 5th July 2018

Walking, Cycling & Horse-Riding Assessor

Douglas Pielage
BEng (Hons)
Graduate Engineer

Signed: pp [redacted]

Date: 5th July 2018

As Design Team Leader I confirm that the assessment has been undertaken at the appropriate stage of scheme development and that the wider Design Team has been involved in the process.

I confirm that in my professional opinion the appointed Lead Assessor has the appropriate experience for the role making reference to the expected competencies contained in HD 42/17.

Design Team Leader

James Horne
TMICE
Principal Engineer

Signed: [redacted]

Date: 5th July 2018

Appendix A

38748/100/007 Rev A – 'Proposed Site Access Signalised Junction – General Arrangement';

38748/100/008 Rev A – 'Proposed Marsh End Signalised Roundabout – General Arrangement';

FOR CONTINUATION REFER TO DRAWING 38748/100/008

SUPPORTING EARTHWORKS GRADIENT LOCALLY INCREASED TO 1 IN 2.5 TYPICAL EARTHWORKS HEIGHT = 0.7m

2.5m WIDE VERGE TO ACCOMMODATE PROPOSED UTILITIES

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

ON SITE ROAD LAYOUT TAKEN FROM PHP DRAWING 4179-1-SK015 P36 - 'MASTER PLAN'

PROPOSED 2m WIDE FOOTWAY ONLY

CALDECOTE FARM ACCESS TO BECOME 'LEFT IN, LEFT OUT' STYLE JUNCTION WITH GHOST ISLAND RIGHT TURN LANE

CALDECOTE FARM

LAY-BY STYLE BUS STOP WITH OFFLINE REDWAY FORMING A 'FLOATING BUS STOP'

PROPOSED LAY-BY STYLE BUS STOP

PROPOSED EARTHWORKS RESPOND TO EXISTING TOPOGRAPHICAL SURVEY WHICH INCLUDES EXISTING EARTHWORK MOUNDS

PROPOSED 2.5m GRASSED VERGE

QUARRY ACCESS TO BECOME 'LEFT IN, LEFT OUT' STYLE JUNCTION

PROPOSED EARTHWORKS RESPOND TO EXISTING TOPOGRAPHICAL SURVEY WHICH INCLUDES EXISTING EARTHWORK MOUNDS

EXISTING QUARRY ACCESS

ADVANCE DIRECTIONAL SIGN TO BE ERECTED IN ORDER TO PROVIDE MOTORIST WITH AWARENESS OF THE GEOMETRIC LAYOUT OF THE PROPOSED JUNCTION AND DEVELOPMENT ACCESS

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

WILLEN ROAD

FOR CONTINUATION REFER RIGHT

FOR CONTINUATION REFER LEFT

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

EXISTING LIGHTING COLUMN TO BE RELOCATED OUTSIDE OF PROPOSED FOOTWAY / CYCLE TRACK AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH NO BUFFER ZONE ACROSS EXISTING OVERBRIDGE

NEW ROAD RESTRAINT SYSTEM ALIGNED AND EXTENDED TO ACCOMMODATE SHARED USE FOOTWAY / CYCLE TRACK

EXISTING BRIDGE PARAPET HEIGHT 1m. DESIRABLE MINIMUM FOR CYCLE USE 1.4m AS PER IAN 195/16, TABLE 2.5.6. NEW 1.4m HIGH BRIDGE PARAPET TO BE PROVIDED. THESE WORKS MAY REQUIRE AN AIP (APPROVAL IN PRINCIPLE)

EXISTING POST AND RAIL FENCE TO BE RELOCATED OUTSIDE OF THE WORKING WIDTH OF THE NEW ROAD RESTRAINT SYSTEM WHERE POSSIBLE

NEW ROAD RESTRAINT SYSTEM ALIGNED AND EXTENDED TO ACCOMMODATE SHARED USE FOOTWAY / CYCLE TRACK

EXISTING FINGER POST SIGN TO BE RELOCATED AND BT COVER RAISED TO LEVEL OF PROPOSED FOOTWAY / CYCLE TRACK

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK TIES INTO EXISTING REDWAY NETWORK

WILLEN ROAD

DANSTEED ROAD

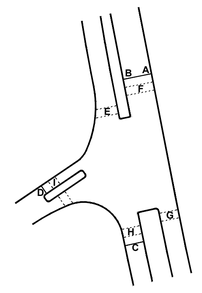
DANSTEED WAY

TONGWELL ROUNDABOUT

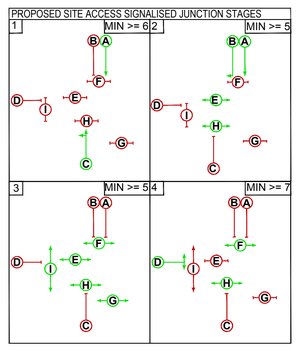
TONGWELL STREET

M1

PROPOSED SIGNALISED SITE ACCESS JUNCTION STAGING



PROPOSED SITE ACCESS SIGNALISED JUNCTION STAGES



KEY:-

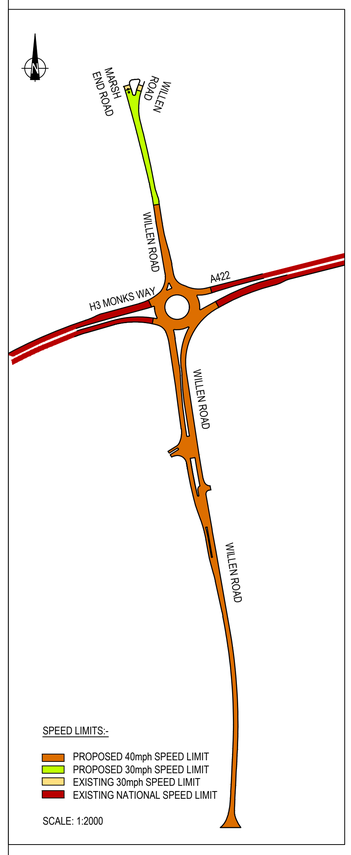
- HIGHWAYS ENGLAND HIGHWAY BOUNDARY
- MILTON KEYNES COUNCIL HIGHWAY BOUNDARY
- PROPOSED FULL HEIGHT SAFETY BARRIER
- PROPOSED ROAD RESTRAINT TERMINAL
- PROPOSED TRAFFIC SIGNALS
- PROPOSED TRAFFIC SIGNAL CONTROL BOX WITH MAINTENANCE ACCESS BAY FORMED USING PERMEABLE PAVING
- JUNCTION INTERVISIBILITY ZONE
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 45m SSD - DESIGN SPEED 40kph

NOTES:-

1. ALIGNMENT OF MILTON KEYNES COUNCIL HIGHWAY BOUNDARY BASED ON HIGHWAY BOUNDARY INFORMATION PROVIDED BY MILTON KEYNES COUNCIL INTERPOLATED AND ALIGNED TO PHYSICAL FEATURES ON THE TOPOGRAPHICAL SURVEY. HIGHWAYS ENGLAND HIGHWAY BOUNDARY BASED ON HIGHWAYS ENGLAND GIS OPEN DATA DATED 28.10.2016.
2. MKC'S DRAFT 'A HIGHWAY GUIDE FOR MILTON KEYNES' DOCUMENT (DATED SEPTEMBER 2018), FIG 1 - 'HIGHWAY NETWORK PLAN' AND TABLE 3.12 - 'TABLE OF LAYOUT STANDARDS' INDICATE THAT THE DESIGN STANDARDS FOR WILLEN ROAD SHOULD BE BASED ON THE DESIGN MANUAL FOR ROADS AND BRIDGES DESIGN STANDARDS.
3. EXISTING POSTED SPEED LIMIT OF WILLEN ROAD IS NATIONAL SPEED LIMIT (60mph). MKC HAVE CONFIRMED THAT A TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT TO 40mph. THEREFORE, THE DESIGN SPEED FOR THIS JUNCTION WILL BE 70kph.
4. THE DESIGN OF THE SIGNALISED JUNCTION HAS BEEN BASED ON ADC INFRASTRUCTURE LINSIG MODEL - 'App XX - PROPOSED ACCESS AND MARSH END MITIGATION v5.lsg3x'.
5. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH:-
   - PBA TECHNICAL NOTE TN2003/001 - 'WILLEN ROAD, SIGNALISED JUNCTION DEVELOPMENT ACCESS';

DESIGN RISK

TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT OF WILLEN ROAD AND REINFORCE THE 70kph DESIGN SPEED. A TRO MAY NOT BE GRANTED, AND THIS PROCESS IS SEPARATE TO THE PLANNING PROCESS.



SPEED LIMITS:-

- PROPOSED 40mph SPEED LIMIT
- PROPOSED 30mph SPEED LIMIT
- EXISTING 30mph SPEED LIMIT
- EXISTING NATIONAL SPEED LIMIT

SCALE: 1:2000

Rev.	Description	Drawn	Date	Chkd
A	REVISED TO REFLECT CLIENT COMMENTS & STAGE 1 RSA	DL	21.05.19	JSH

LAND AT CALDECOTE FARM NEWPORT PAGNELL

SEGRO NEWPORT PAGNELL LTD

PETER BRETT ASSOCIATES LLP

www.peterbrett.com

PROPOSED SITE ACCESS SIGNALISED JUNCTION - GENERAL ARRANGEMENT

Drawing Status:	PRELIMINARY
CAD Reference:	38748/100/007
Drawn:	DL
Date:	05.07.2018
Scale: 1: @ A0	1:500 & 1:2000

Project No:	Drawing No:	Rev:
38748	100/007	A

FOR CONTINUATION SEE INSET 1

PROPOSED UNCONTROLLED CROSSING TO CONNECT FOOTWAY / CYCLE TRACK TO EXISTING SHARED USE FOOTWAY / CYCLE TRACK

WILLEN ROAD SPORTS GROUND

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE NARROWS TO CONNECT WITH EXISTING SHARED USE FOOTWAY / CYCLE TRACK

PROPOSED UNCONTROLLED CROSSING TO CONNECT FOOTWAY / CYCLE TRACK TO EXISTING TRAFFIC FREE ROUTE 'TONGWELL LANE' WITH CONNECTIONS TO WIDER REDWAY NETWORK

TONGWELL BROOK

TONGWELL LANE

MARSH END ROAD

WILLEN ROAD

L Twr

INSET 1

FOR CONTINUATION SEE RIGHT

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 0.75m WIDE BUFFER ZONE FORMED WITH ROAD MARKING

Cricket Field

1m WIDE VERGE

NEW ROAD RESTRAINT SYSTEM ALIGNED TO SUIT NEW CENTRAL RESERVE ALIGNMENT AND TIED INTO EXISTING ROAD RESTRAINT SYSTEM

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE (MINIMUM) BUFFER ZONE

0.5m WIDE VERGE

2.5m WIDE VERGE

A422

EXISTING LAY-BY TO BE REMOVED

FOR CONTINUATION SEE BELOW

2.5m WIDE VERGE

EXISTING LAY-BY TO BE REMOVED

NEW ROAD RESTRAINT SYSTEM ALIGNED TO SUIT NEW CENTRAL RESERVE LAYOUT AND TIED INTO EXISTING ROAD RESTRAINT SYSTEM AT M1 OVERBRIDGE TO THE WEST

H3 MONKS WAY

2.5m WIDE VERGE

PROPOSED 3m WIDE FOOTWAY / CYCLE TRACK WITH 1m WIDE BUFFER ZONE

ADVANCE DIRECTIONAL SIGN TO BE ERECTED IN ORDER TO PROVIDE MOTORIST WITH AWARENESS OF THE GEOMETRIC LAYOUT OF THE PROPOSED JUNCTION AND DEVELOPMENT ACCESS

FOR CONTINUATION REFER TO DRAWING 38748/100/007

A422

FOR CONTINUATION SEE ABOVE

EXISTING LAY-BY TO BE REMOVED

2.5m WIDE VERGE

KEY:-

- HIGHWAYS ENGLAND HIGHWAY BOUNDARY
- MILTON KEYNES COUNCIL HIGHWAY BOUNDARY
- PROPOSED FULL HEIGHT SAFETY BARRIER
- PROPOSED ROAD RESTRAINT TERMINAL
- PROPOSED TRAFFIC SIGNALS
- PROPOSED TRAFFIC SIGNAL CONTROL BOX WITH MAINTENANCE ACCESS BAY FORMED USING PERMEABLE PAVING
- JUNCTION INTERVISIBILITY ZONE
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 120m SSD - DESIGN SPEED 70kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (NEARSIDE) 295m SSD - DESIGN SPEED 120kph
- FORWARD VISIBILITY TO PRIMARY SIGNAL (OFFSIDE) 295m SSD - DESIGN SPEED 120kph

NOTES:-

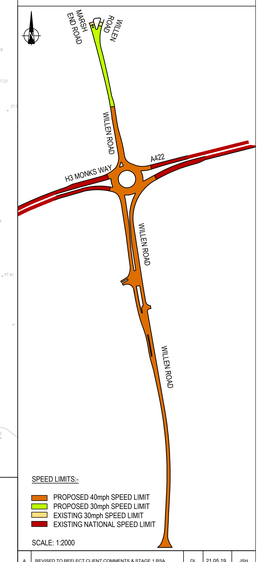
1. ALIGNMENT OF MILTON KEYNES COUNCIL HIGHWAY BOUNDARY BASED ON HIGHWAY BOUNDARY INFORMATION PROVIDED BY MILTON KEYNES COUNCIL INTERPOLATED AND ALIGNED TO PHYSICAL FEATURES ON THE TOPOGRAPHICAL SURVEY. HIGHWAYS ENGLAND HIGHWAY BOUNDARY BASED ON HIGHWAYS ENGLAND GIS OPEN DATA DATED 28.10.2016.
2. MKC'S DRAFT 'A HIGHWAY GUIDE FOR MILTON KEYNES' DOCUMENT (DATED SEPTEMBER 2018), FIG 1 - 'HIGHWAY NETWORK PLAN' AND TABLE 3.12 - 'TABLE OF LAYOUT STANDARDS' INDICATE THAT THE DESIGN STANDARDS FOR WILLEN ROAD SHOULD BE BASED ON THE DESIGN MANUAL FOR ROADS AND BRIDGES DESIGN STANDARDS.
3. EXISTING POSTED SPEED LIMIT OF WILLEN ROAD AND MONKS WAY IS NATIONAL SPEED LIMIT (60mph). MKC HAVE CONFIRMED THAT A TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT TO 40mph ON APPROACH TO THE ROUNDABOUT. THEREFORE, THE DESIGN SPEED FOR THIS JUNCTION WILL BE 70kph.
4. THE DESIGN OF THE SIGNALISED ROUNDABOUT HAS BEEN BASED ON ADC INFRASTRUCTURE LINSIG MODEL - 'App XX - PROPOSED ACCESS AND MARSH END MITIGATION v5.lsg3x'.
5. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH:-
   - PBA TECHNICAL NOTE TN2003/002 - 'A422, SIGNALISED ROUNDABOUT';

DESIGN RISK

TRAFFIC REGULATION ORDER (TRO) WILL BE REQUIRED TO REDUCE THE SPEED LIMIT ON APPROACH TO MARSH END ROUNDABOUT FROM MONKS WAY WESTBOUND AND EASTBOUND AND REINFORCE THE 70kph DESIGN SPEED. A TRO MAY NOT BE GRANTED, AND THIS PROCESS IS SEPARATE TO THE PLANNING PROCESS.

THE EXISTING LAY-BYS ADJACENT TO H3 MONKS WAY AND THE A422 ARE TO BE REMOVED BY THE SCHEME PROPOSALS AND NOT REPLACED (AS DISCUSSED AND AGREED WITH MKC DATED 20th JUNE 2018). HOWEVER, IF THE HIGHWAY AUTHORITY REQUIRE THESE LAY-BYS TO BE REINSTATED IN ACCORDANCE WITH CURRENT DMRB STANDARDS, THIS WOULD REQUIRE AN ALTERATION TO THE PROPOSED PRELIMINARY DESIGN.

THE EXISTING CROSS SECTION OF H3 MONKS WAY DOES NOT PROVIDE ROAD RESTRAINT SYSTEMS (RRS) WITHIN THE CENTRAL RESERVE. MKC HAVE INSTRUCTED RRS TO BE PROVIDED WITHIN THIS CENTRAL RESERVE. PLEASE NOTE, WE HAVE REVIEWED THE VERTICAL PROFILE AND VISIBILITY ON THE IMMEDIATE APPROACH TO THE PROPOSED JUNCTION AND CAN CONFIRM THAT DESIRABLE MINIMUM STOPPING SIGHT DISTANCE OF 295m (DESIGN SPEED 120kph) IS NOT RESTRICTED TO THE 'OBJECT HEIGHT' BY THE PROPOSED RRS.

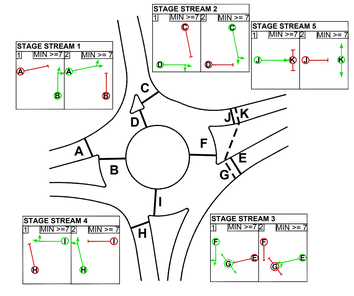


SPEED LIMITS:-

- PROPOSED 40mph SPEED LIMIT
- PROPOSED 30mph SPEED LIMIT
- EXISTING 30mph SPEED LIMIT
- EXISTING NATIONAL SPEED LIMIT

SCALE: 1:2000

PROPOSED MARSH END SIGNALISED ROUNDABOUT STAGES



Rev.	Description	Drawn	Date	Chkd
A	REVISED TO REFLECT CLIENT COMMENTS & STAGE 1 RSA	DL	21.05.19	JSH

LAND AT CALDECOTE FARM NEWPORT PAGNELL

SEGRO NEWPORT PAGNELL LTD

PETER BRETT ASSOCIATES LLP

www.peterbrett.com

PROPOSED MARSH END SIGNALISED ROUNDABOUT - GENERAL ARRANGEMENT

Drawing Status:	PRELIMINARY
CAD Reference:	38748/100/008
Drawn:	DL
Date:	05.07.2018
Scale: 1: @ A0	1:500 & 1:2000

Project No: 38748 | Drawing No: 100/008 | Rev: A

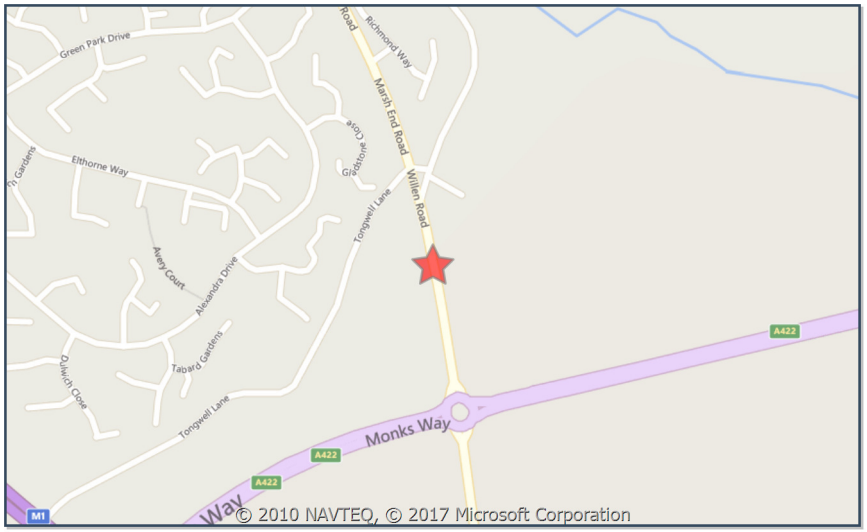
Appendix B

Collision Data

crashmap.co.uk

Crash Date:	Sunday, October 05, 2014	**Time of Crash:**	12:07:00 AM	**Crash Reference:**	**201443S026104**

Highest Injury Severity:	Slight	**Road Number:**	U0	**Number of Casualties:**	1
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487667 242835
Weather Description:	Fine without high winds				
Road Surface Description:	Wet or Damp				
Speed Limit:	60				
Light Conditions:	Darkness: no street lighting				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	5	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
2	Car (excluding private hire)	3	Female	56 - 65	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Other	None	None

Casualties

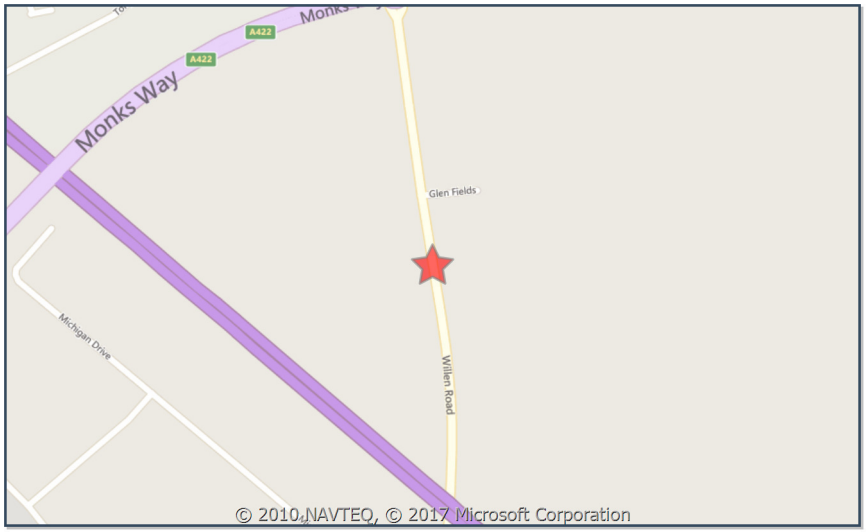
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Female	56 - 65	Unknown or other	Unknown or other

Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

Crash Date:	Thursday, January 09, 2014	**Time of Crash:**	5:35:00 PM	**Crash Reference:**	**201443S053014**

Highest Injury Severity:	Slight	**Road Number:**	U0	**Number of Casualties:**	3
Highway Authority:	Milton Keynes			**Number of Vehicles:**	4
Local Authority:	Milton Keynes			**OS Grid Reference:**	487776 242200
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	60				
Light Conditions:	Darkness: no street lighting				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Single carriageway				
Junction Control:	Not Applicable				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Bus or coach (17+ passenger seats)	15	Male	56 - 65	Vehicle proceeding normally along the carriageway, not on a bend	Front	Journey as part of work	None	None
2	Car (excluding private hire)	9	Male	36 - 45	Vehicle is moving off	Back	Other	None	None
3	Car (excluding private hire)	13	Female	36 - 45	Vehicle is moving off	Back	Commuting to/from work	None	None
4	Car (excluding private hire)	10	Female	26 - 35	Vehicle is moving off	Back	Commuting to/from work	None	None

Casualties

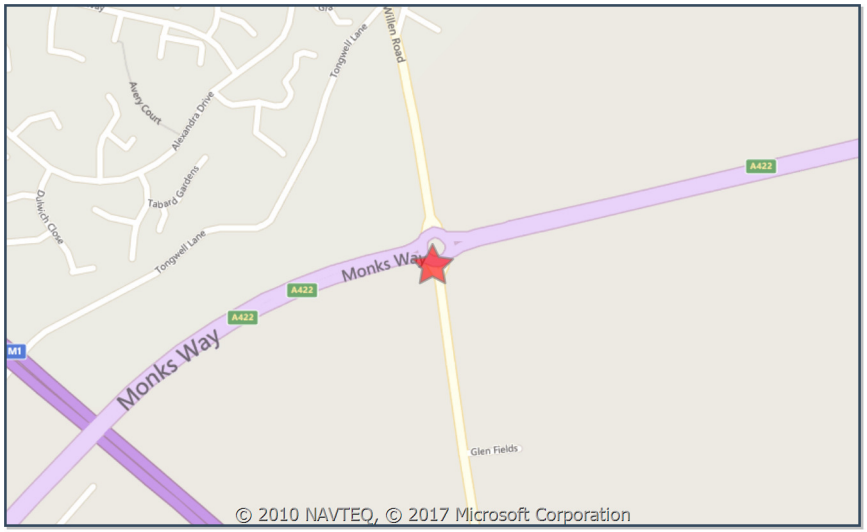
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	3	Slight	Vehicle or pillion passenger	Female	36 - 45	Unknown or other	Unknown or other
2	2	Slight	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other
3	1	Slight	Driver or rider	Female	36 - 45	Unknown or other	Unknown or other

Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

Crash Date:	Sunday, April 13, 2014	**Time of Crash:**	4:38:00 PM	**Crash Reference:**	**201443S053044**

Highest Injury Severity:	Slight	**Road Number:**	A422	**Number of Casualties:**	2
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487706 242588
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	16	Female	16 - 20	Vehicle is in the act of turning left	Front	Other	None	None
2	Car (excluding private hire)	-1	Female	26 - 35	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Other	None	None

Casualties

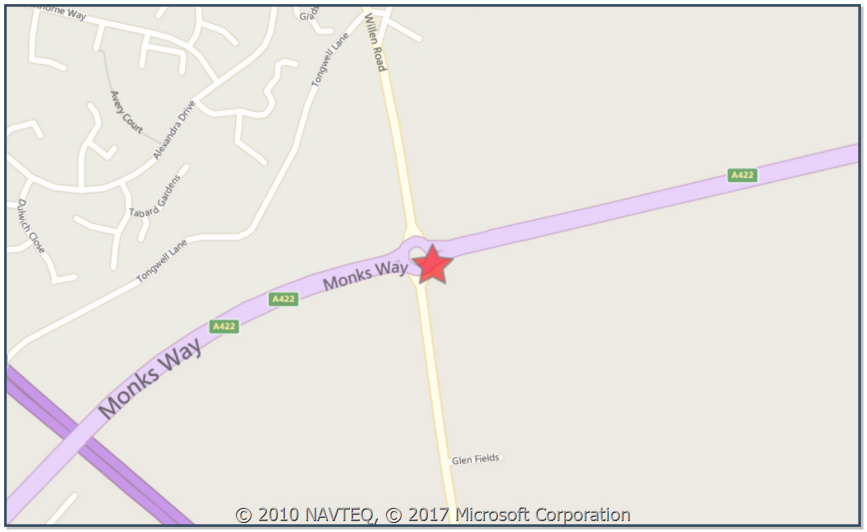
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Vehicle or pillion passenger	Female	36 - 45	Unknown or other	Unknown or other
2	2	Slight	Vehicle or pillion passenger	Male	6 - 10	Unknown or other	Unknown or other

Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

Crash Date:	Wednesday, July 30, 2014	**Time of Crash:**	7:00:00 PM	**Crash Reference:**	**201443S139074**

Highest Injury Severity:	Serious	**Road Number:**	A422	**Number of Casualties:**	1
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487734 242602
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	2	Female	46 - 55	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None
2	Pedal cycle	-1	Male	46 - 55	Vehicle proceeding normally along the carriageway, not on a bend	Nearside	Other	None	None

Casualties

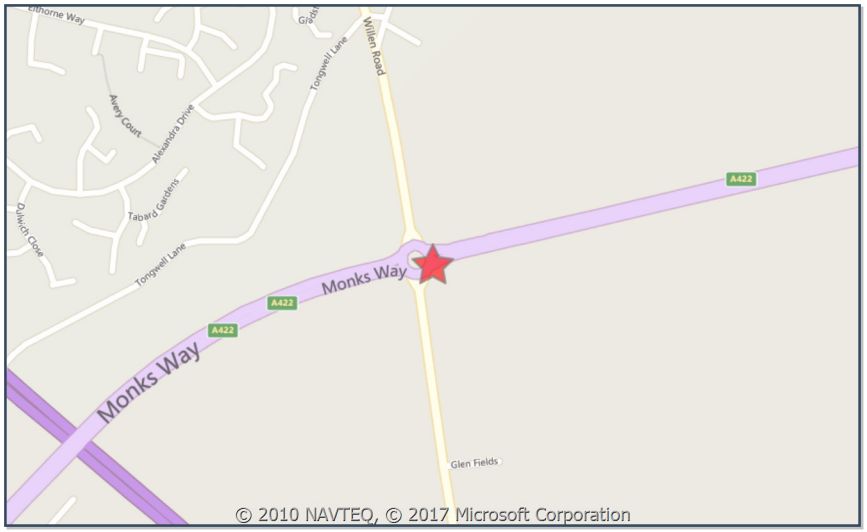
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Serious	Driver or rider	Male	46 - 55	Unknown or other	Unknown or other

Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

Crash Date:	Thursday, September 03, 2015	**Time of Crash:**	6:11:00 AM	**Crash Reference:**	**201543S014095**

Highest Injury Severity:	Slight	**Road Number:**	A422	**Number of Casualties:**	1
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487737 242603
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Darkness: street lights present and lit				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	2	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Commuting to/from work	None	None
2	Pedal cycle	-1	Male	56 - 65	Vehicle proceeding normally along the carriageway, not on a bend	Back	Commuting to/from work	None	None

Casualties

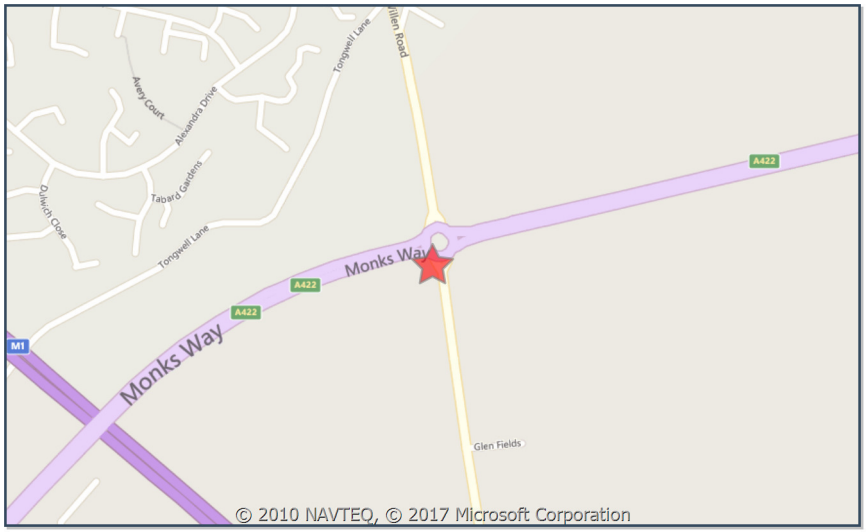
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	56 - 65	Unknown or other	Unknown or other

Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

Crash Date:	Tuesday, June 23, 2015	**Time of Crash:**	10:02:00 AM	**Crash Reference:**	**201543S107065**

Highest Injury Severity:	Slight	**Road Number:**	A422	**Number of Casualties:**	1
Highway Authority:	Milton Keynes			**Number of Vehicles:**	1
Local Authority:	Milton Keynes			**OS Grid Reference:**	487702 242576
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	10	Male	36 - 45	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	Tree

Casualties

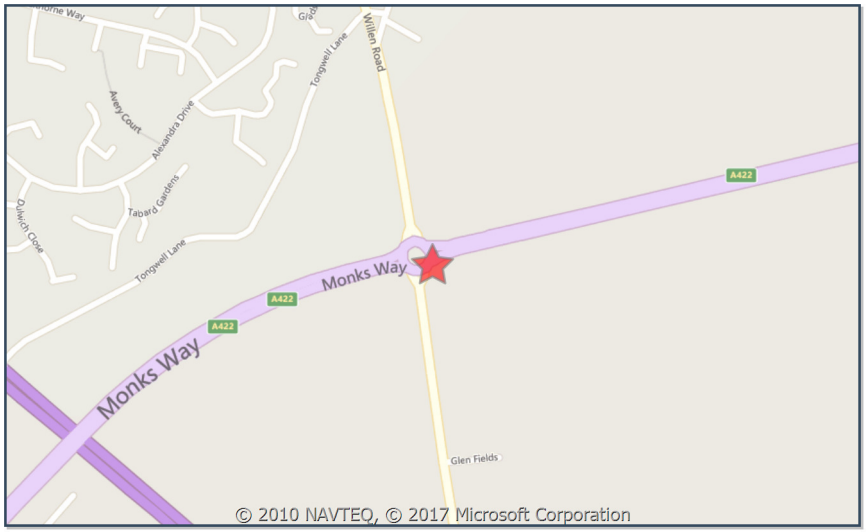
Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	36 - 45	Unknown or other	Unknown or other

Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

Crash Date:	Tuesday, September 13, 2016	**Time of Crash:**	6:50:00 PM	**Crash Reference:**	**2016430298242**

Highest Injury Severity:	Slight	**Road Number:**	A422	**Number of Casualties:**	1
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487736 242599
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	10	Male	21 - 25	Vehicle proceeding normally along the carriageway, not on a bend	Offside	Other	None	None
2	Pedal cycle	-1	Male	26 - 35	Vehicle proceeding normally along the carriageway, not on a bend	Front	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	26 - 35	Unknown or other	Unknown or other

Accident Description: Not Available

crashmap.co.uk

2017 data is provisional and is subject to change

Crash Date:	Monday, June 05, 2017	**Time of Crash:**	6:42:00 PM	**Crash Reference:**	**2017430170562**

Highest Injury Severity:	Serious	**Road Number:**	A422	**Number of Casualties:**	2
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487745 242607
Weather Description:	Raining with high winds				
Road Surface Description:	Wet or Damp				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				

For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

2017 data is provisional and is subject to change

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Motorcycle 50cc and under	-1	Male	16-24	Vehicle is slowing down or stopping	Unknown	Other	None	None
2	Motorcycle 50cc and under	-1	Male	16-24	Vehicle is slowing down or stopping	Unknown	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Male	16-24	Unknown or other	Unknown or other
2	2	Serious	Driver or rider	Male	16-24	Unknown or other	Unknown or other

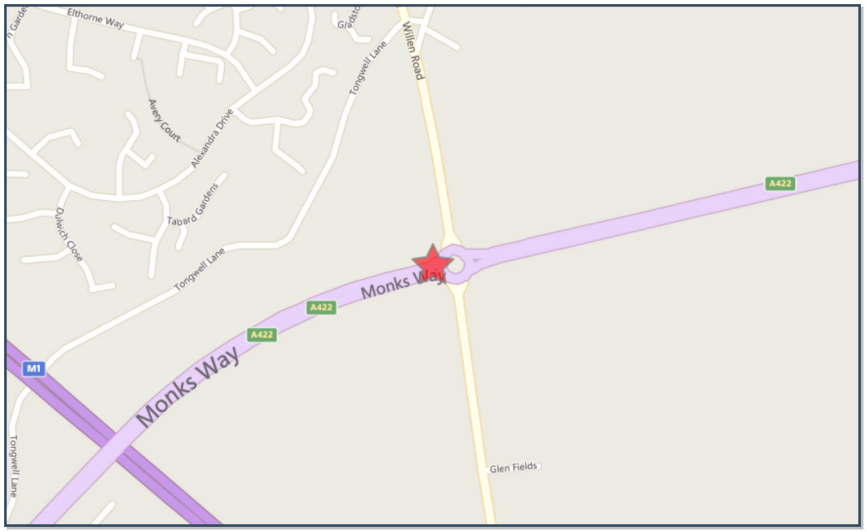
Accident Description: Accident description text currently unavailable for this highway authority / police force

crashmap.co.uk

2017 data is provisional and is subject to change

Crash Date:	Saturday, August 05, 2017	**Time of Crash:**	1:50:00 PM	**Crash Reference:**	**2017430241882**

Highest Injury Severity:	Slight	**Road Number:**	A422	**Number of Casualties:**	2
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487678 242609
Weather Description:	Raining without high winds				
Road Surface Description:	Wet or Damp				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Roundabout				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Give way or uncontrolled				



For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

2017 data is provisional and is subject to change

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	-1	Female	45-54	Vehicle proceeding normally along the carriageway, not on a bend	Unknown	Other	None	None
2	Car (excluding private hire)	-1	Male	25-34	Vehicle is slowing down or stopping	Unknown	Other	None	None

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
1	1	Slight	Driver or rider	Female	45-54	Unknown or other	Unknown or other
1	2	Slight	Vehicle or pillion passenger	Female	65-74	Unknown or other	Unknown or other

crashmap.co.uk

2017 data is provisional and is subject to change

Crash Date:	Tuesday, September 19, 2017	**Time of Crash:**	11:37:00 AM	**Crash Reference:**	**2017430281181**

Highest Injury Severity:	Slight	**Road Number:**	A422	**Number of Casualties:**	1
Highway Authority:	Milton Keynes			**Number of Vehicles:**	2
Local Authority:	Milton Keynes			**OS Grid Reference:**	487997 242686
Weather Description:	Fine without high winds				
Road Surface Description:	Dry				
Speed Limit:	70				
Light Conditions:	Daylight: regardless of presence of streetlights				
Carriageway Hazards:	None				
Junction Detail:	Not at or within 20 metres of junction				
Junction Pedestrian Crossing:	No physical crossing facility within 50 metres				
Road Type:	Dual carriageway				
Junction Control:	Unknown				

For more information about the data please visit: *www.crashmap.co.uk/home/aboutthedata* and *www.crashmap.co.uk/home/definitions*

2017 data is provisional and is subject to change

Vehicles involved

Vehicle Ref	Vehicle Type	Vehicle Age	Driver Gender	Driver Age Band	Vehicle Maneouvre	First Point of Impact	Journey Purpose	Hit Object - On Carriageway	Hit Object - Off Carriageway
1	Car (excluding private hire)	-1	Male	NK	Vehicle proceeding normally along the carriageway, not on a bend	Unknown	Other	None	None
2	Car (excluding private hire)	-1	Male	35-44	Vehicle is waiting to proceed normally but is held up	Unknown	Journey as part of work	None	Central crash barrier

Casualties

Vehicle Ref	Casualty Ref	Injury Severity	Casualty Class	Gender	Age Band	Pedestrian Location	Pedestrian Movement
2	1	Slight	Driver or rider	Male	35-44	Unknown or other	Unknown or other

Appendix C

Liaison with MKC's Public Transport and subsequently Road Safety Team

James Horne

From: Paradine, Kevan <[redacted]
Sent: 16 January 2018 10:15
To: James Horne
Subject: RE: Public transport improvements - new employment development on Willen Road

Hello James

Thank you for this, that's fine as all the information should enable an objectively based decision to be made on the matter.

Regards
Kevan.

Kevan Paradine
[redacted]
[redacted]k
http://www.milton-keynes.gov.uk

Milton Keynes Council | Public Realm Service Group | Synergy Park | Chesney Wold | Bleak Hall | Milton Keynes | MK6 1LY

From: James Horne [[redacted]
Sent: 16 January 2018 09:48
To: Paradine, Kevan
Cc: Simmonds, Stuart; Swannell, Andy; Rebecca Leconte; Matt Tatler; Mark Higgins; Stuart Dunhill; [redacted]; Mark Plowman; Paul James; Douglas Pielage
Subject: [EXT] RE: Public transport improvements - new employment development on Willen Road

Dear Kevan,

Many thanks providing your thoughts of the initial proposals for these bus stops associated with the junction designs. Your comments, and our response below, will form part of the Stakeholder engagement recorded within the 'Walking, Cycling & Horse-Riding Assessment' currently being prepared to inform the design proposals.

1, My initial thoughts are that, purely from a road safety perspective, buses should not wait on the carriageway within this particular highway environment. Traffic volumes will increase; even with a speed limit reduction, speeds may still be high on this road. Specific issues with an on carriageway stop are increased potential for conflict between road users moving out to pass a stationary bus and those approaching from behind at higher speed, also potential for shunts behind a stopped or stopping bus. The frequency of bus services means the risk of conflict will also be quite high.

Vehicle Speeds
Willen Road, both north and south of Marsh End Roundabout, is currently subject to the National Speed Limit (60mph). A speed survey has already been undertaken along both lengths of Willen Road. This survey indicated that the 85th percentile speeds are as follows:-

- Willen Road (Northern Arm) = 41mph;
- Willen Road (Southern Arm) = 49mph;

These results indicate that the 85th percentile speeds are below the current national speed limit (60mph). This suggests that there is currently not a significant speeding issue along Willen Road. **NB** the scheme proposals include reducing the speed limit to 40mph.

Recorded Injury Collision
1No. Injury collisions have been recorded in 3 years along Willen Road (southern length). It is considered that this does not constitute a significant collision problem at this location with the current national speed limits in place.

Traffic Volumes
Given the likely off peak shift patterns of the employment sites on the development, it is considered likely that the increase in traffic volumes, and frequency of bus services, will not affect traffic volumes significantly in peak periods.

Type of Bus Stop Provision i.e. On-carriageway or Lay-by
It is noted that MKC's Draft document 'A Highway Guide for Milton Keynes – November 2014' states that the layout of bus stops provided on roads classified as 'District Distributors' (such as Willen Road) should be provided with lay-bys. However, this is primarily for high speed, dual carriageway roads e.g. the Grid Road like the A4146. The scheme proposals are to reduce the speed limit from National Speed Limit (60mph) to 40mph. Therefore, on-carriageway bus stops are more appropriate. The current scheme proposals are more akin to the existing bus stop layouts provided on the A5130 near Poppy Avenue.

Future Collisions
The shunt type collision described above could be a potentially occurrence at any on-carriageway bus stop. Our proposals have the benefit of being one way, thus removing the potential of head on collisions occurring.

Therefore, and after taking the above into consideration, we would conclude that the appropriate style of bus stop associated with the proposed development junction should be 'on-carriageway' as currently indicated by our proposals.

Please can we have an updated response from MKC on this issue.

Kind regards,

James Horne
Principal Engineer
For and on behalf of Peter Brett Associates LLP - Northampton

t [redacted]
e
w

From: Paradine, Kevan [mailto:Kevan.Paradine@Milton-Keynes.gov.uk]
Sent: 22 December 2017 10:27
To: James Horne <[redacted]
Subject: RE: Public transport improvements - new employment development on Willen Road

Thank you James, you have a good Christmas and new year too.

Regards
Kevan.

Kevan Paradine
Senior Road Safety Engineer
T: 01908 252036
E: kevan.paradine@milton-keynes.gov.uk
http://www.milton-keynes.gov.uk

Milton Keynes Council | Public Realm Service Group | Synergy Park | Chesney Wold | Bleak Hall | Milton Keynes | MK6 1LY

From: James Horne [mailto:[redacted]]
Sent: 22 December 2017 10:23
To: Paradine, Kevan
Cc: Paul James
Subject: [EXT] RE: Public transport improvements - new employment development on Willen Road

Thanks Kevan,

Hope you have a good Christmas and new year.

Kind regards,

James Horne
Principal Engineer
For and on behalf of Peter Brett Associates LLP - Northampton

t
e [redacted]
w

From: Paradine, Kevan [mailto:Kevan.Paradine@Milton-Keynes.gov.uk]
Sent: 22 December 2017 10:01
To: James Horne <[redacted]>
Subject: FW: Public transport improvements - new employment development on Willen Road

Hello James

This is the email I sent to Stuart. The email outlines my reasoning and preference regarding bus stop siting. As we discussed, there are other considerations etc. within the final decision making process.

Regards
Kevan.

Kevan Paradine
Senior Road Safety Engineer
T: 01908 252036
E: kevan.paradine@milton-keynes.gov.uk
http://www.milton-keynes.gov.uk

Milton Keynes Council | Public Realm Service Group | Synergy Park | Chesney Wold | Bleak Hall | Milton Keynes | MK6 1LY

From: Paradine, Kevan
Sent: 21 December 2017 14:56

To: Simmonds, Stuart
Subject: RE: Public transport improvements - new employment development on Willen Road

Hi Stuart

The proposals for the road layout are not clear and the bus stop locations are not shown on the drawing attached to your email. Andy Swannell has since shown me drawings that indicate the bus stops upstream of the new signal junction and I have based my comments on these drawings.

My initial thoughts are that, purely from a road safety perspective, buses should not wait on the carriageway within this particular highway environment. Traffic volumes will increase; even with a speed limit reduction, speeds may still be high on this road. Specific issues with an on carriageway stop are increased potential for conflict between road users moving out to pass a stationary bus and those approaching from behind at higher speed, also potential for shunts behind a stopped or stopping bus. The frequency of bus services means the risk of conflict will also be quite high.

Regards
Kevan.

Kevan Paradine
Senior Road Safety Engineer
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From: Simmonds, Stuart
Sent: 18 December 2017 15:38
To: Paradine, Kevan
Subject: FW: Public transport improvements - new employment development on Willen Road

Hello Kevin,

The masterplan gives the detail of the Highways works at the junction with the new entrance to the development. Apparently the A422 roundabout is going to be signalised. Thoughts about on carriageway or in laybys.

regards

Stuart Simmonds

Public Transport Technical Lead

T: 01908 252011

E: Stuart.Simmonds@milton-keynes.gov.uk

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Milton Keynes Council I Saxon Court I 502 Avebury Boulevard I Milton Keynes I MK9 3HS

From: Rebecca Leconte [mailto:Re[redacted]]
Sent: 25 October 2017 11:45
To: Simmonds, Stuart

Cc: Stuart Dunhill
Subject: [EXT] Public transport improvements - new employment development on Willen Road

Stuart,

We have been commissioned by Roxhill Developments to provide transport and highways advice to support an outline planning application for a new employment development on Willen Road, south of Newport Pagnell. As part of this, we need to promote public transport access. This email has therefore been prepared to introduce the proposed development and seek initial advice from you on what is required to facilitate public transport access.

Initial correspondence with Andy Swannell at MKC (following a review of our Transport Assessment Scoping Study), suggested that service provision along this route is poor and that contributions are required. We are meeting with Andy and his consultants to discuss the proposals and the scope of the Transport Assessment on **Friday 3rd November**, and it would therefore be useful to have your feedback before then if possible.

Site location

As shown in the attached figures, the development site is located to the south of Newport Pagnell and east of Milton Keynes. It is a triangular piece of land bound to the north by the A422 Monks Way, to the east by Willen Rd, and to the west by the M1. The site forms part of a much larger area of land allocated within the Plan:MK for a mixed residential and employment sustainable urban extension, within Policy SD14 – Milton Keynes East.

Proposed development

As shown in the attached masterplan, the outline development proposals comprise two large B8 warehouse and distribution units with ancillary B1 office use. It is envisaged that the site as a whole would employ approximately 1000 employees. It is likely that the units will operate 24 hours a day and utilise shift patterns (typically 0600-1400, 1400-2200 and 2200-0600 hours), although staff within the ancillary office uses will work more standard office hours.

Forecast number of public transport trips

Based on travel to work data from the 2011 Census, we forecast that approximately 5% of all trips to and from work will be by bus, and 5% will be by train (as part pf a multimodal journey involving walking, cycling or bus).

At this stage, we therefore forecast that the development would generate approximately 110 two-way bus passenger trips per day, and 10 two-way bus passenger trips in the peak hours. A similar number of train passenger trips are forecast, and assuming that these then use the bus between the site and the train station (due to the distance from Milton Keynes Central), the development would generate an additional 20 bus passenger trips in the peak hours, and 220 bus passenger trips per day.

Existing bus services

It is understood that the following bus services route along Willen Road past the site (see attached figure):

- Service 1 – between Newton Leys and Newport Pagnell, via MK Central train station.
  - This currently runs every 30 minutes from Monday to Saturday (between approximately 7am and 7pm), and hourly during the evenings (until approximately midnight) and on Sundays.
  - However, from 1 November, the service will terminate at MK Central during the day, and only run past the site and to/from Newport Pagnell in the evenings at an hourly frequency.
- Service C10 – between MK Central rail station and Bedford bus station, via Newport Pagnell
  - This currently stops on Willen Road hourly from Monday to Friday (between approximately 6am and 7pm).

Proposed mitigation

As part of the proposed development, it is proposed to provide new bus stops on Willen Road, with shelters and timetable information (subject to land availability and taking into account the Redway route that is also being proposed as part of the development).

It is also proposed to provide funding to improve the frequency of the bus service along Willen Road (with current focus on service 1) to facilitate access and allow the timetable to coincide with shift changeover times.

With the above context, we would appreciate your advice on likely contributions to secure suitable public transport connections to and from the site, and whether this would be via improvements to Service 1, or via improvements to/the diversion of another service. If possible, please could you get back to me before Friday 3rd November?

I trust that the above provides a useful summary of the development, but if you have any questions or require further information, please do not hesitate to contact me.

Regards

Rebecca Leconte
Associate Director – ADC Infrastructure Limited

[redacted]
www.ADCinfrastructure.com
Western House, Western Street, Nottingham, NG1 3AZ


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Appendix D

Liaison with MKC's Senior Transport Planner – Cycling and Events Management

James Horne

From: James Horne
Sent: 02 February 2018 16:09
To: 'Randle, Sara'
Cc: 'andy.swannell@milton-keynes.gov.uk'; Paul James; Douglas Pielage
Subject: FW: RE: Newport Pagnell - Proposed Highway Improvement Scheme

Dear Sara,

Many thanks for providing your thoughts of the initial proposals for these junction designs. Your comments, and our response below, will form part of the Stakeholder Engagement recorded within the 'Walking, Cycling & Horse-Riding Assessment' currently being prepared to inform the design proposals.

1, The proposed Redway linkages are inefficient and indirect. To reach Marsh End Road from the existing redway on the H4 Dansteed Way would require three road crossings including two major junctions and six separate stages in this current proposal. (A potential unnecessary delay of 3 minutes to a simple 6 minute journey.) I can see no reason why the Redway switches from the west side of Willen Road to the east side, creating an unattractive and inefficient route for cyclists. At either end, existing Redways and links are on the west side, alternating sides like this is not ideal.

The primary reasons for the proposed Redways is to provide employees working at the new development with off carriageway pedestrian / cyclist access to the site:-

- From Milton Keynes – connecting the existing facilities on the western side of Willen Road (at the Tongwell Roundabout) to the Development, without the need to cross Willen Road;
- From Newport Pagnell – connecting the existing facilities on the eastern side of the Willen Road / Marsh End Road junction, to the Development, providing Toucan Style controlled crossings across the A422 arm of the Marsh End Roundabout (at the location of 3No. Recorded Injury Collisions involving cyclists), then across Willen Road itself at the development signalised junction;
- This, along with physical constraints (such as the available land within the highway boundary) is the reason why these proposed facilities are being provided on differing sides of Willen Road;

When considering cyclists travelling along the length of Willen Road, from Milton Keynes to Newport Pagnell, we note the following benefits are being provided by this scheme:-

- The speed limit along Willen Road, from the Tongwell Roundabout to March End Road, is being to be reduced from National Speed Limit (60mph) to 40mph. Therefore, any cyclist choosing to remain within the carriageway will benefit from lower motorised vehicle speeds;
- Dropped kerbs and cycle road markings have been indicated prior to the stop lines on Willen Road to allow cyclists the opportunity to exit the carriageway prior to both signalised junctions, and join the off carriageway Redway facilities;
- The timings of the controlled crossing point are being reviewed in to order to provide appropriate consideration to cyclists and pedestrians, to reduce journey time. This will also be subject to detailed design;
- The Marsh End Road junction is no longer a roundabout (this junction types has a higher frequency of collisions involving cyclist) and is now a fully signalised roundabout;
- Any cyclist currently travelling from Milton Keynes to Newport Pagnell (and vice versa) is doing so within the carriageway, and would therefore be considered to be an experienced, confident cyclist, who would traditionally choose to remain within the carriageway (even if off carriageway facilities are provided). This scheme provides all types of cyclist with options;

2, There's no indication of how the Redway links to any existing cycle facilities on Marsh End road. There is only one short section of Redway in this area, just north of Tongwell Lane, although Tongwell Lane is traffic free and is also considered to be a good facility of cyclists. Any new Redways would need to link to one of these two facilities and introduce yet another road crossing; unless you would also be willing to upgrade the existing footway in front of the football club to full Redway and create shared use access to Riverside Meadow.

Once additional topographical survey has been obtained for the Willen Road / Marsh End Road junction, the scheme proposals will be updated to indicate how the proposed Redway on the eastern side of Willen Road will connect with the existing facilities at this location, notably:-

- Tongwell Lane;
- The uncontrolled crossing point north of Tongwell Lane; and
- The existing signed shared use footway / cycle track on the eastern side of Willen Road (existing 30mph length) adjacent to the Sports Ground;

3, Redways are 3 metres wide and on a road with this speed limit a verge is required of at least 1 metre. In the section north of Marsh End roundabout you have indicated the width is only 1.9 metres with no verge. This is not acceptable.

MKC does not currently have its own published highway design guide / standards. However, from a review of a Draft copy of MKC's 'A Highway Guide for Milton Keynes – November 2014', Fig 1 and Table 3.12 have classified Willen Road, H3 Monks Way and the A422 as 'District Distributors', and the appropriate design standards as being the Design Manual for Roads and Bridges (DMRB). This has subsequently been confirmed by MKC's Highway Authority.

The design parameters of the proposed Redways have been determined following a review of the following documents:-

- Design Manual for Roads and Bridges (DMRB):-
  - TA 90/05 – 'The Geometric Design of Pedestrian, Cycle and Equestrian Routes';
  - TA 91/05 – 'Provision for Non-Motorised Users';
  - Interim Advice Note 195/16 – 'Cycle Traffic and the Strategic Road Network';
- Local Transport Note 2/95 – 'The Design of Pedestrian Crossings';
- Local Transport Note 1/12 – 'Shared Use Routes for Pedestrians and Cyclist';
- DfT's Guidance on the Use of Tactile Paving Surfaces;
- A Highway Guide for Milton Keynes – November 2014 DRAFT;

As you have noted, 3m wide Redways with 1m wide buffer zones are being provided adjacent to the 40mph carriageway for the majority of the scheme proposals. However, over a short length (60m approx.), the proposed Redway on the eastern side of Willen Road (north of the Marsh End Roundabout), reduces to 2m (approx.) and is without a buffer zone. This is due to insufficient room to accommodate the increased carriageway width, as well as a standard Redway layout, within the extents of the existing highway boundary at this location.

Therefore, a short section of Redway with reduced width is being proposed, in accordance with the ethos of the DMRB, which promotes the provision of pedestrian and cyclist facilities along entire routes, even if short sections are below desirable widths. Also, Para 7.31 of LTN 1/12 which states:-

Para 7.31 *"It might not always be possible to meet the minimum recommendations for the route as a whole. In this case, practitioners need to consider whether a new sub-standard facility is better than none. For example, on lightly used routes, especially rural shared use routes that avoid high speed roads which have no specific provision for pedestrians or cyclists, a narrow route might represent a considerable improvement on existing conditions."*

Employees will be travelling to the site in order to get to work, or return home, and as a consequence they are likely to be travelling in the same direction.

4, Any vertical street furniture etc should be set back 0.5 metres from the Redway. Exceptions would be on the bridge.

Noted.

5, The approaches of the Redways from the north to Marsh End roundabout and from the south to the junction with the new development access have very poor alignment and do not allow the user to scan for vehicles approaching from behind.

The approaches to the controlled crossings have been provided within the land available. We agreed that the current alignments of the footway / cycle tracks do not provide cyclists with the ability to observe oncoming traffic prior to deciding whether to cross or not before reaching the controlled crossing. However, given the nature of the adjacent carriageways, particularly the H3 Monks Way and A422, we would should suggest that an alignment that guides you

to the controlled crossing points and makes you slow down / stop, in order to use the Toucan style controlled crossing points, is more appropriate in this instance.

6, Bus stop placement introduces conflict with users travelling along the Redways. A 'floating bus stop' configuration could be considered.

The scheme proposals will be updated to indicate the alignment of the Redways being taken around the back of the Bus Shelters, in order to reduce the potential conflict between cyclists and pedestrians entering / exiting buses.

I trust the above is clear, however, please contact me to discuss further as required.

Kind regards,

James Horne
Principal Engineer
For and on behalf of Peter Brett Associates LLP - Northampton

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From: Randle, Sara [mailto:Sara.Randle@milton-keynes.gov.uk]
Sent: 20 December 2017 15:39
To: Douglas Pielage [redacted]
Cc: James Horne [redacted]>; Swannell, Andy <Andy.Swannell@Milton-keynes.gov.uk>
Subject: RE: Newport Pagnell - Proposed Highway Improvement Scheme

Dear Douglas,

Many thanks for your email. I have taken a look at the plans and have the following comments:

- The proposed Redway linkages are inefficient and indirect. To reach Marsh End Road from the existing redway on the H4 Dansteed Way would require three road crossings including two major junctions and six separate stages in this current proposal. (A potential unnecessary delay of 3 minutes to a simple 6 minute journey.) I can see no reason why the Redway switches from the west side of Willen Road to the east side, creating an unattractive and inefficient route for cyclists. At either end, existing Redways and links are on the west side, alternating sides like this is not ideal.
- There's no indication of how the Redway links to any existing cycle facilities on Marsh End road. There is only one short section of Redway in this area, just north of Tongwell Lane, although Tongwell Lane is traffic free and is also considered to be a good facility of cyclists. Any new Redways would need to link to one of these two facilities and introduce yet another road crossing; unless you would also be willing to upgrade the existing footway in front of the football club to full Redway and create shared use access to Riverside Meadow.
- Redways are 3 metres wide and on a road with this speed limit a verge is required of at least 1 metre. In the section north of Marsh End roundabout you have indicated the width is only 1.9 metres with no verge. This is not acceptable.

- Any vertical street furniture etc should be set back 0.5 metres from the Redway. Exceptions would be on the bridge.
- The approaches of the Redways from the north to Marsh End roundabout and from the south to the junction with the new development access have very poor alignment and do not allow the user to scan for vehicles approaching from behind.
- Bus stop placement introduces conflict with users travelling along the Redways. A 'floating bus stop' configuration could be considered.

If you have any queries, please get in touch.

Kind regards
Sara

Sara Randle
Senior Transport Planner - Cycling and Events Management
T: 01908 254334
E: Sara.Randle@milton-keynes.gov.uk
W: http://www.milton-keynes.gov.uk/cycling
Milton Keynes Council | Transport Policy | Saxon Court | 502 Avebury Boulevard | Central Milton Keynes | MK9 3HS

From: Douglas Pielage [redacted]
Sent: 18 December 2017 14:31
To: Randle, Sara
Cc: Cycling; James Horne
Subject: [EXT] Newport Pagnell - Proposed Highway Improvement Scheme

Dear Sara,

We have been passed your details as a point of contact regarding obtaining an opinion from MKC on Walking and Cycling provisions associated with highway improvement schemes.

We are currently working on the design of a new 4 arm signalised junction to be provided on Willen Road to serve a proposed commercial development (western arm), as well as maintain access to the existing farm and residential buildings (eastern arm) known as 'Glenfield' (refer to Draft Drawing 38748/100/007).
The existing H3 Monks Way / A422 / Willen Road 4 arm roundabout is also proposed to be increased in size and signalised, in order to in order to accommodate the likely increase in traffic flows generated by a proposed commercial development (refer to Draft Drawing 38748/100/008).

These proposals are being developed by the 'Walking, Cycling & Horse-Riding Assessment' process as detailed by HD 42/17 – 'Walking, Cycling & Horse-Riding Assessment and Review' (WCHAR).

The scheme objectives include improving conditions for walking and cycling as the current route has limited facilities and connections for Non-Motorised Users (NMUs). This is likely to include:-

- Off carriageway shared use footway / cycle track (Redways);
- Toucan style controlled crossings at the 2No new signalised junctions;
- 2No. new bus stops required to serve the development;

The proposed Redway will allow Pedestrians and Cyclists to travel to and from the proposed development along Willen Road. These facilities will also connect:-

- The existing Redway at the Tongwell Roundabout (southern end of Willen Road);
- To the existing Redway adjacent to Marsh End Road (northern end of Willen Road);

This will take the form of a 3m wide (whenever possible) shared use Redway.

We would be grateful to receive comments from MKC on this proposal, from a walking and cycling point of view, to inform the WCHAR process.

Please can you contact me to discuss further.

Kind Regards,

Douglas Pielage
Graduate Engineer
For and on behalf of Peter Brett Associates LLP - Northampton

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e [redacted]om
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Kind regards,

James Horne
Principal Engineer

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APPENDIX H

DEVELOPMENT VEHICLE TRIP RATES AND DAILY VEHICLE TRIP GENERATION PROFILE

Time Window	Swan Valley Traffic Count			Swan Valley Traffic Count			Trip rates per 100sqm/GFA									Predicted Daily Traffic Profile									
							Light vehicles			Heavy vehicles			Total vehicles			Light vehicles			Heavy vehicles			Total vehicles			% HGV
	Arrive			Depart			trip rates per 100 sqm			trip rates per 100 sqm			trip rates per 100 sqm												
	Lights	Heavies	Total	Lights	Heavies	Total	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Arrive	Depart	Two-way	Two-way
00.00-01.00	14	10	24	10	16	26	0.010	0.007	0.017	0.007	0.012	0.019	0.017	0.019	0.036	5	3	8	3	5	8	8	8	16	50.0%
01.00-02.00	9	15	24	3	15	18	0.007	0.002	0.009	0.011	0.011	0.022	0.017	0.013	0.031	3	1	4	5	5	10	8	6	14	71.4%
02.00-03.00	6	16	22	23	16	39	0.004	0.017	0.021	0.012	0.012	0.023	0.016	0.028	0.044	2	8	10	5	5	10	7	13	20	50.0%
03.00-04.00	10	11	21	13	17	30	0.007	0.009	0.017	0.008	0.012	0.020	0.015	0.022	0.037	3	4	8	4	6	10	7	10	17	58.8%
04.00-05.00	32	15	47	15	10	25	0.023	0.011	0.034	0.011	0.007	0.018	0.034	0.018	0.052	11	5	16	5	3	8	16	8	24	33.3%
05.00-06.00	224	23	247	108	14	122	0.163	0.079	0.241	0.017	0.010	0.027	0.180	0.089	0.268	77	37	114	8	5	13	85	42	127	10.2%
06.00-07.00	107	23	130	79	10	89	0.078	0.057	0.135	0.017	0.007	0.024	0.095	0.065	0.159	37	27	64	8	3	11	45	30	75	14.7%
07.00-08.00	123	21	144	39	28	67	0.089	0.028	0.118	0.015	0.020	0.036	0.105	0.049	0.153	42	13	55	7	10	17	49	23	72	23.6%
08.00-09.00	167	17	184	18	21	39	0.121	0.013	0.135	0.024	0.022	0.046	0.145	0.035	0.181	57	6	63	11	10	21	68	16	84	25.0%
09.00-10.00	80	22	102	25	20	45	0.058	0.018	0.076	0.016	0.015	0.031	0.074	0.033	0.107	27	9	36	8	7	15	35	16	51	29.4%
10.00-11.00	62	25	87	38	27	65	0.045	0.028	0.073	0.018	0.020	0.038	0.063	0.047	0.111	21	13	34	9	9	18	30	22	52	34.6%
11.00-12.00	47	22	69	35	21	56	0.034	0.025	0.060	0.016	0.015	0.031	0.050	0.041	0.091	16	12	28	8	7	15	24	19	43	34.9%
12.00-13.00	68	17	85	76	15	91	0.049	0.055	0.105	0.012	0.011	0.023	0.062	0.066	0.128	23	26	49	6	5	11	29	31	60	18.3%
13.00-14.00	111	14	125	80	23	103	0.081	0.058	0.139	0.010	0.017	0.027	0.091	0.075	0.166	38	27	65	5	8	13	43	35	78	16.7%
14.00-15.00	54	17	71	122	27	149	0.039	0.089	0.128	0.012	0.020	0.032	0.052	0.108	0.160	18	42	60	6	9	15	24	51	75	20.0%
15.00-16.00	31	11	42	154	21	175	0.023	0.112	0.135	0.008	0.015	0.023	0.031	0.127	0.158	11	53	63	4	7	11	15	60	75	14.7%
16.00-17.00	55	23	78	192	14	206	0.040	0.140	0.180	0.017	0.010	0.027	0.057	0.150	0.207	19	66	85	8	5	13	27	71	98	13.3%
17.00-18.00	40	18	58	149	22	171	0.029	0.108	0.137	0.021	0.019	0.040	0.050	0.127	0.177	14	51	65	10	9	19	24	60	84	22.6%
18.00-19.00	123	22	145	122	18	140	0.089	0.089	0.178	0.016	0.013	0.029	0.105	0.102	0.207	42	42	84	8	6	14	50	48	98	14.3%
19.00-20.00	18	19	37	46	13	59	0.013	0.033	0.047	0.014	0.009	0.023	0.027	0.043	0.070	6	16	22	7	4	11	13	20	33	33.3%
20.00-21.00	21	21	42	24	17	41	0.015	0.017	0.033	0.015	0.012	0.028	0.031	0.030	0.060	7	8	15	7	6	13	14	14	28	46.4%
21.00-22.00	48	13	61	18	19	37	0.035	0.013	0.048	0.009	0.014	0.023	0.044	0.027	0.071	16	6	23	4	7	11	20	13	33	33.3%
22.00-23.00	4	12	16	34	15	49	0.003	0.025	0.028	0.009	0.011	0.020	0.012	0.036	0.047	1	12	13	4	5	9	5	17	22	40.9%
23.00-00.00	3	14	17	11	16	27	0.002	0.008	0.010	0.010	0.012	0.022	0.012	0.020	0.032	1	4	5	5	5	10	6	9	15	66.7%
Totals	1457	421	1878	1434	435	1869	1.060	1.043	2.103	0.326	0.326	0.652	1.385	1.369	2.754	497	491	988	155	151	306	652	642	1294	23.6%

	B8 Swan Valley Statistics
GFA /sqm	137500
Employees	1780
Ratio	1 per 77sqm

	Proposed use	
GFA /sqm	47075	
Employees	611	
Ratio	1 per	77 sqm

TABLE 1: UNIT 1 TRIP GENERATION